The Bologna Process: Impact of Tuning on Teaching and Learning: A Case Study

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DEDICATIONS

To my family and friends who always believed.

Cheers and Peace to All
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS ................................................................. III
DEDICATIONS ........................................................................ IV
LIST OF ILLUSTRATIONS ............................................................... 8
LIST OF TABLES ......................................................................... 9
ABSTRACT .................................................................................. 10

CHAPTER 1: INTRODUCTION .......................................................... 12
  Problem Statement .................................................................... 12
  Theoretical Framework ............................................................ 14
  Purpose Statement .................................................................... 16
  Research Questions ................................................................... 17
  Significance of the Study .......................................................... 17
  Researcher Perspective ............................................................. 19
  Delimitations ........................................................................... 20
  Definition of Terms ................................................................... 20
  Organization of Remaining Chapters ........................................ 21
  Summary ................................................................................ 22

CHAPTER 2: REVIEW OF RELATED LITERATURE ............................ 23
  Theoretical Approach to Learning Outcomes .............................. 23
  Developing Learning Outcomes ............................................... 28
  Learning Theories ..................................................................... 34
  Factors That Affect Learning .................................................... 39
  Teaching/Learning Strategies ................................................... 41
  The Curriculum ........................................................................ 48
  Assessment of Student Learning ............................................... 50
  Assessing Learning Outcomes .................................................. 55
  Summary ................................................................................ 59

CHAPTER 3: METHODOLOGY .......................................................... 61
  Research Design ....................................................................... 62
  Case Study Approach ............................................................... 64
  Contexts and Access ................................................................. 66
  Participants and Sampling ........................................................ 66
  Role of Researcher ................................................................... 67
  Data Collection ........................................................................ 68
  Interviews ............................................................................... 69
  Documentation ........................................................................ 71
  Video Presentation ................................................................... 72
  Transcription ........................................................................... 73
  Voice Recognition Software .................................................... 74
  Time Frame for Data Collection ................................................ 74
# Data Analysis

Coding .......................................................... 75
Validity and Reliability ........................................ 78
Ethical Considerations ........................................ 80
Limitations ....................................................... 81
Summary ........................................................ 82

## CHAPTER 4: ANALYSIS AND RESULTS

Data Collection .................................................. 84
Documentation and Media .................................... 87
Syllabi .............................................................. 87
Undergraduate Requirements ............................... 88
University general catalog ................................. 88
Video presentation ........................................... 89
Coding .............................................................. 90
First Cycle Coding ............................................ 91
Second Cycle Coding ......................................... 92
Themes ............................................................. 92
Transparency ..................................................... 92
Autonomy ......................................................... 93
Preparation and Improvement ............................. 94
Intentionality ..................................................... 95
Diverseness ....................................................... 96
Under Development .......................................... 97
Summary ........................................................ 98

## CHAPTER 5: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion ......................................................... 99
Theme 1: Transparency ......................................... 105
Theme 2: Autonomy ............................................. 107
Theme 3: Preparation and Improvement .................. 109
Theme 4: Intentionality ....................................... 113
Theme 5: Diverseness ......................................... 115
Theme 6: Under Development ............................... 120
Summary ........................................................ 122
Limitations of the Study ...................................... 124
Implications of the Study .................................... 124
Recommendations for Future Research ................. 126
Concluding Remarks ......................................... 126

## APPENDICES

Appendix A ......................................................... 128
Appendix B ......................................................... 130
Appendix C ......................................................... 131

Bloom’s Taxonomy ............................................. 129
Biggs’ SOLO Taxonomy ....................................... 130
Information Letter ............................................. 131
Appendix D ........................................................................................................................................... 133
Informed Consent Form ........................................................................................................................... 133
Appendix E ............................................................................................................................................... 137
Interview Guide ...................................................................................................................................... 137
Appendix F ............................................................................................................................................... 139
Codebook for Tuning Study .................................................................................................................... 139
REFERENCES ........................................................................................................................................ 144
VITA ....................................................................................................................................................... 158
LIST OF ILLUSTRATIONS

Figure 1. Model of Constructive Alignment.............................................15
Figure 2. Student learning gaps.................................................................44
Figure 3. Triangulation of data sources.....................................................65
Figure 4. Detailed data collection and analysis strategy.............................86
Figure 5. Coding strategy........................................................................90
Figure 6. Research design....................................................................102
Figure 7. Coding strategy and theme generation.....................................104
Figure 8. Connectivity of emerging themes.............................................105
LIST OF TABLES

Table 1. Syllabi Distribution for Tuning Study.............................................88
Table 2. Categories and Themes from Tuning Study......................................93
ABSTRACT

The higher education system in the United States has come under increasing pressure because of the lack of accountability, transparency, and quality of its graduates. It has also been criticized because of the time it takes students to complete a degree. All of these factors threaten the ability to produce enough qualified graduates to meet the needs of a growing global economy. To address the quality issue, and related accountability and transparency issues, the U.S. Department of Education recommended the adoption of a comparable measure of student learning. Current accountability mechanisms, however, do not take into account authentic student learning that occurs within the classroom where actual learning takes place. Therefore, there is a need for this type of authenticity.

The Lumina Foundation for Education conducted a pilot project intended to ensure the quality of postsecondary degrees and enhance degree attainment. The project focused on developing measurable discipline-specific learning outcomes through Tuning, a faculty-led process. Tuning originated in Europe and is part of the Bologna Process that was initiated in 1999. To obtain a better understanding of this process, a qualitative case study was conducted to determine the impact of these outcomes on teaching and learning at one of the pilot project institutions. Five faculty members who were utilizing the learning outcomes were interviewed. Documentation and a video presentation were also analyzed. Six themes emerged that provide an understanding of the effect of these
outcomes on the academic program studied. The themes are transparency, autonomy, preparation and improvement, intentionality, diverseness, and under development. The results of this study add to the growing discussions about Tuning and could influence the way student learning is measured.
CHAPTER 1: INTRODUCTION

Higher education institutions in the United States are under pressure to demonstrate accountability regarding student learning. One of the reasons is that the United States no longer produces the most college graduates among the world’s developed countries (State Higher Education Executive Officers [SHEEO], 2005). A major focus of the accountability issue is financial responsibility (Carey, 2007; Ewell & Jones, 2006). According to Leveille (2006), rising college costs, poor retention and graduation rates, employer disappointment with the knowledge and skill set of newly hired recent graduates, and concern about the inadequacy and decline of student learning all contribute to increased attrition rates in higher education. The U.S. Department of Education ([USDOE], 2006) found a “remarkable absence of accountability mechanisms to ensure that colleges succeed in educating students” (p. vii). Students, parents, and policy makers are left not only to wonder about the true cost of an education, but also whether schools are doing a good job of teaching students what they need to learn before graduation (Carey, 2007). As higher education increases in importance in this growing global economy, “the more policymakers and consumers will demand of it” (Carey, 2007, p. 29). It is imperative that the U.S. higher education system finds an effective way to respond.

Problem Statement

The current problem facing higher education is the lack of comparable measures of student learning. The recommendation to create such measures was based on several
statistics. Over a ten-year period, the literacy proficiency in the United States has decreased from 40 to 31 percent (USDOE, 2006). The report also states that 90 percent of the new jobs created will require higher knowledge and skill levels, necessitating new hires to have college degrees or postsecondary training. The report notes that sixty-six percent of college students take six years, as opposed to four years, to complete their college degrees. At the current graduation rate, the United States will fall short of supplying enough graduates to fill these future job openings (Kalina, 2012).

The USDOE report (2006) supports the use of instruments to measure student learning and that demonstrate how much a student’s learning has grown over time. However, some of the items suggested for comparison – graduation rates, time to degree, and test scores – fail to capture “authentic assessment.” Initiatives such as the Voluntary System of Accountability (VSA) provide results from standardized examinations that do not directly reflect student learning (Kelly & Adelman, 2010). Authentic assessment uses faculty, and program- or institution-derived assignments and projects that demonstrate the student’s actual learning (Ewell, 2009; Geary Schneider, 2007). Students would be assessed in ways that truly reflect their learning at their institutions and in their specific academic programs. The USDOE (2006) also recommends that academic programs “develop[.] new pedagogies, curricula, and technologies to improve learning” (p. 24). While some emphasis is placed on mathematics and the sciences in particular, the directive applies to all programs. Therefore, finding appropriate mechanisms for authentically demonstrating student learning is needed.

This authentic student learning can be accessed through the use of learning outcomes developed through Tuning, a process that leads to the development of learning
outcomes at the academic discipline level (What is Tuning, n.d.). Tuning is a component of the Bologna Process, which originated in Europe in 1999 when 29 higher education ministers met to create a European higher education system that would enhance the comparability of degrees (Tuning USA, European Origins, n.d.). The process was introduced to the U.S. through a series of detailed reports (Adelman, 2008b, 2008c, 2009), which provided a comprehensive explanation of the process and what it sought to accomplish. In 2009, the Lumina Foundation for Education funded the Tuning USA pilot project, which brought together faculty and student representatives from two- and four-year colleges and universities in three states. They gathered to develop a set of learning outcomes for their specific discipline. As part of the process, faculty returned to their individual institutions and implemented the learning outcomes within their respective departments. The outcomes were then to be evaluated for their effectiveness. Thus far, no published studies have been conducted to determine the impact of the new learning outcomes. Therefore, to gain insight into the effectiveness of the tuned learning outcomes, a qualitative case study was selected.

**Theoretical Framework**

In order to study the learning outcomes, it is necessary to put them into the proper context. The theory of constructive alignment begins with the understanding that learning outcomes set the stage for student learning (Biggs, 2003). From these outcomes, teaching strategies, student learning activities, and assessments are developed. They work together in a continuous feedback loop as illustrated in Figure 1.
The learning outcomes are “statements of what a student should be able to do at the end of a course or program of learning” (McMahon & Thakore, 2006). Once these have been established, an assessment protocol is established that would measure the effectiveness in meeting the learning outcomes. Then, teaching strategies, the curriculum, and learning activities are designed to help students achieve those outcomes. Assessments measure the effectiveness of the components and provide feedback for improving the process. This kind of outcomes-based teaching and learning also accounts for unintended outcomes and assessment strategies do permit their measurement, since they might also benefit student learning (Biggs & Tang, 2011). Unintended outcomes are, by definition, those that the professor does not anticipate. They result from informal activities like reading, watching television, and conversing with friends. Assessments are criterion-based so that student performance is measured against the competencies defined by the outcomes. Students are able to focus on achieving the highest level of competency.
possible rather than on competing against each other for grades. Students must become actively engaged in their learning process. A key aspect of the theory is that the teacher creates a learning environment that “supports the learning activities appropriate to achieving the desired learning outcomes” (Biggs, 2003, p. 1).

Constructive alignment is grounded in constructivism preferentially, although it can also be viewed through phenomenography (Biggs & Tang, 2011). Constructivism posits that learners construct knowledge through their life experiences and they use these as the basis for interpreting new situations they encounter. The use of phenomenography requires that teachers teach from the students’ perspective. That is, the learning outcomes are written from the students’ view of what they are meant to accomplish; therefore, teaching activities are designed to help the students reach those outcomes. A more thorough discussion of constructive alignment is provided in the next chapter.

**Purpose Statement**

The purpose of this study was to examine the effects of the newly instituted tuned learning outcomes on teaching and learning. This includes the teaching strategies professors utilized inside and outside the classroom, the curriculum, the learning activities, and the assessment methods used to measure student learning. After the initial stages of the Tuning process were complete, the faculty pilot participants were responsible for introducing other faculty at their home institutions to the tuned learning outcomes that would become the basis for instruction and learning. This resulted in certain changes in how courses were conducted. This study explored the changes that were made, more specifically, the way instructors taught their classes, the way they chose to incorporate the tuned learning outcomes into their curricula and learning activities, and
the types of assessments they selected to measure the effectiveness of the outcomes. Therefore, the study gathered data from the instructors and gained their perspectives on the adjustments made to accommodate these new learning outcomes.

**Research Questions**

To address the purpose of this study, the following research question was used to guide the research design and data analysis: “How has the use of the tuned learning outcomes impacted teaching and learning?” Within this overarching question lie the following sub-questions:

1. How have the tuned learning outcomes impacted the curricula?
2. How have the tuned learning outcomes impacted teaching/learning practices?
3. How have the tuned learning outcomes impacted assessment?
4. How have the tuned learning outcomes impacted learning?

To answer these questions, qualitative methodology was selected as the most appropriate way to collect the desired information. Since Tuning is new to American higher education, an investigative approach that provides a deep understanding of the resulting learning outcomes is essential.

**Significance of the Study**

The research on the tuned learning outcomes has value for several reasons. The entire process has met with mostly positive reviews and has been studied extensively as a way to monitor progress, as well as stumbling blocks, and to identify weaknesses and successes in implementation (Adelman, 2008a, 2008b, 2008c, 2009; Gaston, 2010). More and more institutions are now participating in Tuning to develop learning outcomes and to
expand the number of fields that are being tuned (Kalina, 2012; Three-state project, 2012). Because the Tuning aspect focuses on using common and understandable language to identify learning outcomes, comparability between institutions becomes easier. Students and parents will no longer have to wonder which metric a school is using when they compare institutions. Furthermore, institutions and policy makers will have concrete data from which to base decisions. Employers will know what their employees have learned in school and can feel confident that they will perform their jobs with the appropriate level of knowledge and skills necessary.

Creating a common language that is easily understood and agreeable to all parties is a challenging task (Adelman, 2008b). However, one of the major strengths of the Tuning process is that it allows individual departments to create their own curricula and modes of assessments that target the learning outcomes (Adelman, 2008b, 2008c). Even though there are reports on the Bologna Process as a whole and there are articles written about the implementation of the entire process in Europe, there are few, if any, studies on the effectiveness of Tuning and its impact at the department level, where the faculty and students are immersed in the teaching/learning process. A case study documents the changes to curricula, teaching/learning strategies, and assessment of learning that have occurred as a result of the Tuning process at one public four-year higher education institution in the United States. This provides a much-needed look into what could become a valuable means of demonstrating accountability.

**Researcher Perspective**
The Bologna Process was introduced to me at the beginning of my doctoral program in a course that provided a history of higher education and discussed some of the issues concerning higher education in the U.S. The work of Dr. Clifford Adelman, through such publications as *The Bologna Club: What U.S. Higher Education Can Learn from a Decade of European Reconstruction* (2008b) and *Learning Accountability from Bologna: A Higher Education Policy Primer* (2008c), introduced me to how Europeans were approaching the issues of accountability in their higher education system. A report published by the Department of Education (2006) called into question the quality of student learning and the lack of accountability and transparency. To me, the Bologna Process seemed to be a potential way to address the decline in the quality of student learning and growing dissatisfaction with the higher education system in the United States.

Tuning, which was introduced as part of the Bologna Process, appeared to be a viable way to provide clear and measurable outcomes of student learning. This would directly target the apparent lack of accountability and transparency in the American system of higher education. And it might also help reverse the decline in status of the U.S. in terms of the number of college graduates produced. It was not until much later in the program that I found out about a tuning project that was sponsored by The Lumina Foundation. I kept this in mind as I progressed through the program and was able to develop my interest into a project on determining the impact of tuning.

**Delimitations**
This study was delimited in its scope since it was bounded by one academic program within one public higher education institution. The university was selected because it participated in the Tuning USA pilot project to develop academic discipline-level learning outcomes. No studies have been conducted thus far, and this researcher believes that the results of a study examining the impact of these new learning outcomes on teaching and learning would add value to higher education’s goal to improve student learning. Because of the narrow focus of this study, generalizations cannot be made and will not be attempted.

**Definition of Terms**


“the public presentation and communication of evidence about performance in relation to goals” (p. 9).

*Assessment:* Assessment is a means of gathering information about what has been learned (Light et al., 2009). It can be a quantitative or qualitative “analytical tool used to measure performance” (Business-Higher Education Forum, 2004).

*Constructive Alignment:* The theory of constructive alignment consists of five components: learning outcomes, teaching strategies, curricula, learning activities, and assessment. The latter four components are designed to help the student achieve the defined learning outcomes, which set the stage for learning (Biggs & Tang, 2011); they are aligned with the outcomes.

*Learning outcomes:* Learning outcomes are defined as statements of what the student is
expected to know and be able to do (McMahon & Thakore, 2009). These authors list the specific achievement and the corresponding competency levels.

*Tuning:* Tuning is a method for “developing reference points for writing discipline-specific criterion-referenced statements of learning outcomes and competencies” (Adelman, 2008c). The cyclical process consists of five stages. First, the core knowledge and skills for the academic subject are defined (The Five Components, n.d.). Second, the knowledge and skills are connected to potential career pathways. Third, the Tuning group of faculty and student representatives consult with stakeholders to gather feedback on the outcomes. Fourth, the feedback is used to revise the outcomes. In the last stage, the group returns to their individual institutions to draft degree specifications based on the outcomes.

**Organization of Remaining Chapters**

The remaining chapters of this dissertation will address specific components of the research study. Chapter 2 includes a review of the literature that reflects concepts related to learning and learning outcomes. These areas include the theoretical framework for the study, learning outcomes, learning theories, factors that affect learning, teaching/learning strategies, curriculum development, and assessment of learning. Chapter 3 details the methodology for the study. This includes the rationale for selecting the qualitative case study approach, context and access, participants and sampling, role of the researcher, data collection and analysis, validity and reliability, ethical considerations and limitations of the study. Chapter 4 presents the research study data and
interpretations. Chapter 5 provides the summary, conclusions and recommendations derived from the study.

**Summary**

This chapter presents the purpose of the research along with the research questions from which the research design and analysis are derived. First, the research is justified through the problem statement. The theoretical framework for the study is discussed, followed by the purpose statement and research questions. This is followed by the significance of the study, which explains the study’s importance. Then, the delimitations are discussed and definitions for terms used in the study are provided. The final section presents the organization of the remaining chapters.
CHAPTER 2: REVIEW OF RELATED LITERATURE

The development and utilization of learning outcomes are designed to promote effective learning. The recently implemented tuned learning outcomes that resulted from the Tuning USA pilot project sponsored by the Lumina Foundation for Education were designed to give students a clear picture of what was expected of them. These outcomes serve as guides that instructors use to help students meet those expectations. Assessment standards and strategies must also be developed and implemented in order to determine whether the process has been successful and to facilitate improvements. A review of the literature in these areas places this research in context and promotes a deeper understanding of the effects of these new learning outcomes on teaching and learning. This review includes information in the following areas: (a) theoretical approach to learning outcomes, (b) developing learning outcomes, (c) learning theories, (d) factors that affect learning, (e) teaching/learning strategies, (f) the curriculum, and (g) assessment of student learning.

Theoretical Approach to Learning Outcomes

The theory of constructive alignment, developed by Australian professor John Biggs, provides an understanding of the link between learning outcomes and the curriculum, and is a useful framework for this dissertation. It provides a comprehensive view of the learning experience in which both the instructor and student are active participants. The theory originated as an experiment for teachers taking a psychology course (Biggs & Tang, 2011). The instructor discovered that the assessment for the
course could not answer the question of whether the teachers increased their professional competency as the course was designed to do. The student teachers actively sought evidence of what they learned in the psychology course in their teaching, thus setting the stage for connecting their teaching methods and learning strategies to the desired outcomes for the courses they taught. From this beginning, the desire to link elements that surrounded the practice of teaching advanced into a framework intended to improve student learning. In this section, constructive alignment is defined and several studies that utilize the theory are discussed.

Constructive alignment is defined as “having coherence between assessment, teaching strategies, and intended learning outcomes” (McMahon & Thakore, 2006). Biggs used the term “constructive” to indicate that students are making meaning of their learning, through learning assignments that are relevant to the desired outcomes (Biggs, 2003). “Alignment” refers to what McMahon and Thakore (2003) define as creating coherence, that is, learning assignments, activities, and teaching strategies are tailored to fit the desired outcomes, and in essence, to effect learning. The model proposes that the learning outcomes are developed first and then inform the assessment criteria. The theory consists of the following four pivotal steps: (1) define the desired learning outcomes (DLOs); (2) select the appropriate teaching and learning activities to promote achievement of the DLOs; (3) assess learning outcomes to determine how well students have met the intended outcomes; and (4) assign the final grade (Biggs, 2003). The theory accounts for all aspects of the learning environment in which students and teachers operate in order to effect learning. Each step is further explained below.
A particularly important feature for defining learning outcomes is the language used to create them. Biggs developed a taxonomic system, or nomenclature, for use with learning outcomes as a way to clarify the level of understanding expected of students (Biggs, 2003). Specific verbs function as markers throughout the outcomes and are rooted in every activity and assessment task. For example, students operating at a low level of understanding would receive “misses the point” to show that they lack enough understanding on an assignment.

In order to help students achieve the DLOs, Biggs (2003) suggested that a range of activities, not just lectures and tutorials, be selected for use inside and outside the classroom. These activities should be tied directly to the learning outcomes. In the third step of this process, appropriate assessment mechanisms are selected and should reflect the learning outcomes as well (Biggs, 2003). The instructor and students work as collaborators to achieve successful and efficient learning experiences, desired learning outcomes, and specified assessment criteria. Biggs (2003) emphasizes viewing the intended outcomes as “qualities of performance”. The last stage of constructive alignment is the grade assignment. Here, it is important to distinguish between the use of quantitative measures, which require students to memorize and offer verbatim units of knowledge, and qualitative measures, which explore the depth of understanding. Biggs (2001) recommends the use of a criterion-referenced qualitative approach, which requires holistic assessment. This holistic approach requires the instructor to view the entire assignment in order to arrive at a final grade rather than merely combining its parts (Biggs and Tang, 2011). It is a matter of “whether the specifics are tuned to create an overall structure or impact” (Biggs & Tang, 2011, p. 214).
The use of this theoretical framework has exposed flaws in programs and led to useful suggestions for improvement. In one study, Borrego and Cutler (2010) explored the use of the constructive alignment framework to examine funding proposals from the U.S. National Science Foundation Integrative Graduate Education and Research Traineeship program. Their goal was to determine the extent to which the desired outcomes, evidence (assessment), and learning experiences related to interdisciplinary graduate education in engineering and science. The authors compared a list of mutual values and practices and found that the requirements, or educational plans, only partially met the learning outcomes. The assessment/evidence portions were more focused on program level goals, not student learning. They consider this lack of constructive alignment a significant flaw in graduate curricula. Therefore, they recommend that the learning outcomes be clearly defined, as well as the use of assessment expertise to help remedy the situation, and that all parts of the curriculum be aligned accordingly. The authors do suggest that a follow up on their study with interviews or surveys could validate their findings. They recognized that dependence on any one source of information does not present a wide enough view of the process.

In another study, Prosser, Ramsden, and Trigwell (2003) examined the dissonance (lack of coherence) of teaching practices related to student learning. They surveyed 8829 students and 408 faculty members in 51 units of study. They investigated student approaches to study and the students’ perceptions of the learning context using Biggs’ Subject Study Process Questionnaire and a subject-specific version of Ramsden’s Course Experience Questionnaire. Instructors were surveyed using a teaching inventory. One result of the study was that certain subjects garnered a higher quality learning experience.
More specifically, science and engineering rated lower on the quality scale than did most of the arts and social sciences courses, which rated at the high end. After examining the data from their study, they concluded that the teaching practices and the environment were not aligned well to promote effective learning. Instruction needed to focus more on the student’s learning rather than the teacher’s experience. Some of their findings could also be attributed to the experience level of the teachers. Those with less experience tended to teach in dissonant ways; whereas those teachers designated as senior tutors or demonstrators created more effective learning environments.

The theory has demonstrated its potential to improve course design, and thus, student learning, as demonstrated in a study by Thota and Whitfield (2010). These two authors wanted to design an introductory programming course that would instill the desired learning in their students. Previously, students had experienced difficulty in understanding and passing the course. The authors put to use their newfound awareness of the influence of learning context on learning outcomes, approaches to learning, and student perceptions of learning. Understanding what preconceived notions of learning students brought into the classroom with them was critical to making progress. The authors employed constructivism and pedagogy of phenomenography into their approach to designing the course. Using the new course design, they found that they could affect which learning approach students used by more effectively linking outcomes, assessment, and activities. Since only twenty-one students participated in this mixed-methods study, further studies using a larger sample size would provide evidence for the reliability of the authors’ results.
What this review of constructive alignment demonstrates is that it can be useful for improving student learning by connecting the elements of teaching and learning. It is not necessarily the only contributor to improving student learning, as the study by Thota and Whitfield (2010) demonstrates. By combining it with other useful theories for different aspects of the learning experience, both students and teachers benefit. The underlying message is that to understand student learning, many factors have to be considered.

**Developing Learning Outcomes**

To address student learning, faculty have developed learning outcomes for their courses. Some of these learning outcomes address learning at a broad institutional level. Tuning, however, offers a different approach to developing learning outcomes since it requires the collaboration between faculty and student representatives from different colleges and universities to define expectancies at the academic program level. As part of the Bologna Process, Tuning has been part of the European higher education landscape for more than a decade. A website has been devoted specifically to this area (http://www.unideusto.org/tuningeu/). Interested individuals can explore the details of the process and view the many subject areas that have been tuned. Each country has its own site from which further information can be obtained. The site also features a detailed explanation of the Tuning process. To explore the development of learning outcomes, the original stages of the process defined in Europe are discussed. This is followed by examples of learning outcomes and guides for creating them. The terminology, which is an important part of the learning outcomes, is also discussed.
The Tuning USA pilot project institutions used the learning outcomes that were defined in Europe as guides for developing their own discipline-level learning outcomes (The Minnesota Office of Higher Education Final Report, 2010; Tuning USA Final Report: The 2009 Indiana Pilot, 2009; Tuning USA Final Report – Utah, 2009). The process as defined by the Europeans consists of five stages (or components). In the first stage, the representatives from the different institutions define the discipline core, which includes the core competencies for the degree levels and the outcomes that result from the competencies (The Components, n.d.). The group then determines the career pathways that graduates in that field can follow. Stakeholders are consulted in the next stage. They provide feedback on the competencies and learning outcomes to the tuning group, who then use that feedback to revise the outcomes in the next stage of the process. Once these four stages are complete, the learning outcomes are taken back to the individual institutions where they are used to draft degree specifications. The goal of this process is to offer explicit statements of what graduates of each program should know and what skills they should possess after completion (The Components, n.d.). Tuning is viewed as a cyclical process that starts with the competencies and outcomes, moves to identification of the discipline core and workplace applications, and then to departmental collaboration to develop program statements. Continuous improvement is built in as the outcomes are assessed and the results of the assessment are used to make further refinements.

The Council for the Advancement of Standards (CAS) and the Association of American Colleges and Universities (AACU) developed learning outcomes that apply to learning on a broader scale. CAS combined its original outcomes with those from *Learning Reconsidered* (CAS, 2009), a landmark report edited by Richard Keeling
(2006). This revised list includes six student outcome domains: knowledge acquisition, construction, integration, and application; cognitive complexity; intrapersonal development; interpersonal competence; humanitarianism and civic engagement; and practical competence. These outcomes are broad in nature and each includes several dimensions, which collectively create a holistic view of an individual, not only as an independent actor, but also as a collaborator who works within his or her community and the wider world as an engaged and responsible citizen.

The AACU’s Valid Assessment of Learning in Undergraduate Education (VALUE) initiative developed its set of learning outcomes from existing faculty and program learning outcomes (expectations and criteria) that delineate the beginning through advanced levels of competency (AACU, n.d., VALUE rubrics). These learning outcomes cover knowledge of human cultures and the physical and natural world, intellectual and practical skills, personal and social responsibility, and integrative and applied learning (AACU, n.d., Liberal education). The outcomes could prove useful in addressing the concerns of national and state level policymakers who want to see scores and quantitative data for accountability (Rhodes, 2010). Currently, the VALUE initiative is working on establishing reliability measures for some of the rubrics and is working with campuses to develop guides on using the rubrics for assessing general education programs (AACU, n.d., Liberal education).

Colleges and universities also offer guidance on developing and using learning outcomes. For example, Northeastern Illinois University (NEIU) published a guide for developing learning outcomes, advising developers that the outcomes should be student-focused, aligned between course, program, and institutional levels, focus on abilities that
are central to the discipline, focus on lasting aspects of learning, are limited to a manageable number, and are specific enough to be measurable (NEIU, n.d.). The outcomes address knowledge, skills, values, and attributes. The guide alerts the developer to the need to consider these outcomes as cyclical, forming a feedback loop for continuous improvement. A key feature is the fit between intended learning outcomes, assessment formats, and the class assignments, which combine to create curricular alignment. This is the essence of constructive alignment.

Jackson, Wisdom, and Shaw’s (2003) guide to developing learning outcomes orients the reader to the definition of learning outcomes, the vocabulary used to construct them, the use of them, and introduces the theory of constructive alignment, which connects learning outcomes to how the course is designed. The authors present the construction of learning outcomes as a model of three integrated components: a precisely worded statement of the intended outcome of the learning, the process and resources that lead to achievement and demonstration of the outcomes; and the criteria for assessing the outcomes, not only for achieving the outcome but also distinguishing the level of performance. The authors stress that the importance of bringing the curriculum in line with the learning outcomes cannot be understated since it provides the vehicle through which students will reach the learning expectations.

Specificity is crucial for creating learning outcomes. The nomenclature must be explicit enough to convey exactly what is expected of students – the competencies and levels of achievement. The rubrics for learning outcomes utilize a special nomenclature or taxonomy. Taxonomies describe the words used to pinpoint exactly what the instructor wants to see evidence of in a student’s work (Light, Cox, & Calkins, 2009). Bloom’s
taxonomy (see Appendix A), for example, includes six levels of complexity (Light et al., 2009), which are designed to describe “intellectual behavior important in learning” (Overbaugh & Shultz, n.d.). For example, an instructor would use words like “recognize” or “list” for determining the student’s ability to remember information. To examine a student’s level of understanding, “classify” or “explain” would be used. Learning is ranked from a level of just remembering information to understanding, applying, analyzing, evaluating, and finally, creating it, in that order. Each category requires a higher level of thinking and application of what the student should have learned.

The “Structure of the Observed Learning Outcomes” (SOLO) (Appendix B) is another taxonomy that can be used to assess learning outcomes. The SOLO taxonomy describes levels starting at pre-structural (students collect bits of information) to uni-structural (students make simple and clearly obvious connections between information), to multi-structural (students make more connections without indicating significance), to relational (student notes significance of parts to the whole), and finally to the extended abstract level (student branches outside subject area and beyond to make connections) (Atherton, 2011). Examples of words or phrases used for the learning outcomes developed using SOLO taxonomy include “misses the point” for the pre-structural level and “theorize” or “hypothesize” for the extended abstract level (Light et al., 2009). Both taxonomies provide concrete, easy to understand and definable words to describe levels of cognitive/intellectual output.

While learning outcomes are generally viewed in a positive light, not everyone believes they should be used at any level other than the course level; and the language should not be constrictive (Hussey & Smith, 2003, 2008). These authors take specific aim
at the use of learning outcomes as “devices for monitoring and audit” (Hussey & Smith, 2003, p. 357). They also take issue with the notion that learning outcomes can account for all types of learning. The authors strongly believe that learning can be intentional and unintentional; therefore, both need to be considered. There is no mechanism to account for the unintentional outcomes; therefore, they offer their own model of learning to incorporate them. The authors are particularly concerned about Biggs’ model of constructive alignment, referring to the idea of creating a system that requires students to be actively engaged in their own learning as “entrapment” (Hussey & Smith, 2003). Further, they believe that applying the term “learning outcome” to degree programs is “misuse”. Bennett and Brady (2012) agree. They believe that learning outcome statements distance the teacher from the student, thus interfering with learning. The two articles by Hussey and Smith (2003, 2008) clearly demonstrate the authors’ commitment to incorporating all learning that students experience into the learning process. Their differences with Biggs and others on the use of learning outcomes to describe competencies at levels other than the course level indicate a lack of understanding of the purpose and utilization of learning outcomes.

The development of learning outcomes takes time, commitment, and experience (NEIU, n.d.). The process also requires faculty buy-in and demonstrated administrator support (Fort, 2011), as recommended by a faculty member who participated in a pilot project on learning outcomes training. Through that project, he learned to appreciate the link between the instructor’s role in helping students learn and measuring outcomes of that learning.
As this brief review illustrates, learning outcomes can be written at different levels and to include different types of learning. While the discipline-level learning outcomes developed through tuning target degree programs, the outcomes written by CAS and the AACU target the liberal learning that students should receive during their college years and those which employers have asked their newly hired college graduates to possess (Hart Research Associates, 2010). These are complementary rather than competitive outcomes. The language used to write them creates measurability, which enables institutions to demonstrate student learning.

Learning Theories

Students learn in different ways; and this can create a challenge for professors who must develop the activities, assignments, and assessments that would benefit all of the students in each class. Professors, however, have the flexibility to structure learning experiences to meet the various ways of learning and to maximize effective learning. In order to do this effectively, an understanding of how students learn is important. Therefore, several theories that explain the learning process are reviewed.

Learning has been viewed from different philosophical and psychological perspectives. Rationalism is a philosophical perspective that describes the acquisition of knowledge and truth through reason (Rationalism, 2011). Empiricism, on the other hand, promotes knowledge and truth through experience (Empiricism, 2011). Psychology-based learning theorists like Thorndike, a classical behaviorist, believed in the scientific approach and rewards and punishments as a means of learning (Bransford et al., 2000). Other psychologists, for example, Piaget and Vygotsky, held different views. Piaget’s early studies on children led him to believe that cognitive processes were responsible for
the acquisition and use of knowledge (Papalia & Olds, 1995). Vygotsky believed that people took an active role in their learning (Bransford et al., 2000). He included a socio-cultural dimension, which viewed learning as occurring within cultural contexts and involving social interactions. He also developed the notion of a zone of proximal development (ZPD), which refers to “the distance between the actual developmental level…and the level of potential development” (Bransford et al., 2000). With proper assistance, the person can progress to that next level.

As mentioned previously, Jean Piaget believed in cognitive approaches to learning creation. He and fellow psychologist and philosopher John Dewey provided a clear appreciation for constructivism, which emphasizes the learner (Thanasoulas, n.d.). Learning occurs as a result of interactions with the environment. People construct meaning through their interactions and then apply that meaning to new situations they encounter. They attempt to connect the old with the new. The different types of constructivism – cognitive, critical, radical, and social – all share the same fundamental belief that learners “construct their own knowledge” (Sener, 1997, as cited in Boghossian, 2006, p. 714). Knowledge is subjective.

The opposite view of constructivism is behaviorism, which posits that knowledge is gained through external observation (Boghossian, 2006). It is based on the stimuli-response dyad. The only acceptable knowledge is that which can be viewed publicly. Psychologist John Watson founded this school of thought because he believed that behaviors resulted from conditioning (Cherry, n.d.). Interactions with environmental stimuli elicit responses that direct a person’s behavior. The repetitive nature of these interactions further entrenches the response. This conditioning occurs when people come
into contact with naturally occurring stimuli (classical conditioning) or when rewards and punishments are used to train behavior (operant conditioning). Maslow, another notable psychologist, promoted the humanist view of learning (Humanistic theory of learning, n.d.). He believed that learning was based on striving for self-actualization, the desire to reach one’s highest potential.

Experiential learning theory espouses the belief that learning occurs through a four-stage continuous learning cycle (Smith, 2001). The cycle includes concrete experience (learning in practice), observation and reflection (objective analysis), abstract conceptualization (review of conceptual understanding), and active experimentation (finding solutions through experimentation). Learning can start any of the stages, as they form a continuous spiral.

Some psychologists believe in a multidimensional, hierarchical model of intelligence that consists of a general intelligence and over 70 cognitive abilities (Lattuca & Stark, 2009). Learners progress and move up the hierarchy from primary cognitive abilities toward broader groups of more general factors. However, as Lattuca and Stark point out, there is some disagreement in the psychology community over the existence of general intelligence and a hierarchy.

The information-processing model also defines learning in terms of intelligence. According to this view, there are three types of intelligence – analytical (academic), creative, and practical (Lattuca & Stark, 2009). Learning requires the ability to integrate all of these in “new and insightful ways” (p. 160). Practical intelligence allows a person to interact with the environment in ways that best meet his or her needs, through the use of adaptation, utilization, and manipulation. A related approach, multiple intelligences,
offers different types of intelligence to explain learning. They include visual-spatial, musical, interpersonal, and intrapersonal (Lattuca & Stark, 2009); people typically demonstrate a preference for one of these. According to the authors, these theoretical perspectives also have their critics and many believe that more testing is needed to validate them. Research does, however, help explain that it is more difficult to predict and explain achievement using the measures of general intelligence, especially as behaviors become more contextualized. Specifically for college students, predictors of future success are best linked to successful learning experiences with specific kinds of problems and in certain settings. The social and cultural factors, however, are missing from the intelligence theories; thus, they may alter how learning is viewed.

Another approach to understanding learning is through andragogy, formulated by Malcolm Knowles, who believed that there are five assumptions that underlie adult learning (Conlan, Grabowski, & Smith, 2003). In the first assumption, adult learners are viewed as individuals who have an independent self-concept and who can direct their own learning (Merriam, 2001, as cited in Conlan et al., 2003). The second assumption states that learners rely on their collection of life experiences as a learning resource. In the third assumption, adults change roles that coincide with their learning needs. According to the fourth assumption, adults act in a problem-centered manner and want to apply knowledge immediately. Finally, in the fifth assumption, internal factors motivate adults rather than external factors. Later, Knowles did acknowledge that his theory was not limited to adults; but he does stress the importance of involving learners in as much of their education as possible (Conlan et al., 2003). The theory is somewhat difficult to classify and has been referred to by a variety of names, including “theory of adult
education”, “theory of adult learning”, and “theory of technology of adult learning”.

Regardless of the title used, the main focus of the theory is on creating a learner-centered environment with a self-directed learner. The learner takes control of his or her own learning in any learning situation.

In project-based learning, individuals focus on solving a problem (Conlan et al., 2003). They gather pertinent information and then synthesize, analyze, and develop knowledge from it. Learning is connected to something real, which makes it valuable to the learners. The instructor acts as a guide and advisor throughout the process. Another orientation to learning is self-directed learning, considered informal because learners bear the responsibility for their own learning processes by “diagnosing their personal learning needs, setting goals, identifying resources, implementing strategies and evaluating outcomes” (Conlan et al., 2003, Self-Directed Learning).

Learning can also be viewed differently, through the transformational learning framework. This theory specifies three types of knowledge – instrumental, communicative, and emancipatory (Cranton, 2002) as the basis for understanding and influencing the learning process. Instrumental knowledge is equivalent to the objective knowledge (cause-and-effect) that is derived from using scientific methodology. Communicative knowledge results from understanding oneself, others, and community or societal norms via language and validated consensus. Critical reflection and critical self-reflection create self-awareness, which together form the basis of emancipatory knowledge. In this last type, learners are liberated from constraints. In essence, transformative theory consists of an event, from which a person develops a distorted view; the person becomes cognizant of this view; considers alternatives; and, after careful
examination of the alternatives, makes the decision to change the assumption or perspective. Although transformation cannot be “taught”, instructors can, however, create an environment that allows or promotes this type of change.

To better utilize learning theories, it is important for instructors to “understand them as principles that have been tested and that have some power to explain how things work across different situations and contexts. These theories can give us some consistent ways of looking at classroom practice and some rational explanations for what occurs” (Hammond et al., 2001, p. 17). While there are numerous theories that explain the learning process, only a few are discussed here. They briefly demonstrate that learning involves many factors in people’s lives. Experiences and how those experiences are viewed affect how people approach events and situations later in life. Culture also influences learning. Creating experiences that take into account and take advantage of the different ways in which people learn is an efficient approach to effect student learning.

Factors That Affect Learning

While it is important to understand the underlying mechanisms responsible for learning through the study of learning theories, it is equally important to examine other factors that influence the learning process. Students approach learning differently; this is based on their perception of what is expected of them. Their individual goals in the learning process are also relevant. These factors are briefly discussed to provide a more thorough understanding of how students approach knowledge and skill attainment.

Learning strategies differ for individuals and depend on the situation and influence how people process information (Lattuca & Stark, 2009). A few of these strategies include cognitive, surface and deep processing. Students may use cognitive
strategies such as rehearsing, elaboration, and organization. Rehearsing can include such activities as taking verbatim notes or underlining text. Elaboration includes paraphrasing, creating analogies, and answering questions. Lastly, organizational strategies include outlining and diagramming. While rehearsing helps encode information in memory, it does not help students connect new information to previous knowledge. Elaboration, on the other hand, helps build connections between old and new information, thus transferring information into long-term memory. Organization involves selecting information that is appropriate and then building connections. Surface processing and deep processing are other strategies that students use to process information. The surface approach might be appealing for an uninteresting course (Lattuca & Stark, 2009) as a way to reproduce information without necessarily trying to understand the information (Scouller, 2000). The deep approach would be used for a course that could help the student reach his or her personal goals (Lattuca & Stark, 2009). Students find the information useful and worthwhile and take the time to absorb it. Motivation determines which approach is used as well as prior knowledge that helps the student understand the information.

Expanding on motivation’s role in learning, behavior theorists believe that motivation is a result of rewards and punishments, while cognitive theorists attribute it to the person’s estimate of the consequences of a behavior or activity (Lattuca & Stark, 2009). The student’s self-assessment of competence and the difficulty of the task are also factors. This self-assessment is a result of how he or she attributes their successes and failures. Learning context plays a role in motivation, as do peers, families, the classroom, the community, culture and emotions.
Other factors that affect learning include the student’s goals, which result from the value placed on particular endeavors (Lattuca & Stark, 2009). The student’s interest level and the level of engagement or participation reinforce learning. A student’s culture may determine how he or she approaches learning as well. While individualistic cultures focus on the individual’s identity, independence, and self-fulfillment, collective cultures emphasize group identity, interdependence, and social responsibility (Lattuca & Stark, 2009).

These factors demonstrate, as with the learning theories, how vast the list is of influences on learning. It would be impossible to provide a comprehensive list of everything that could affect the learning process just as it is impossible and impractical to attempt to provide coverage of every learning theory that exists. However, the major types of influences, approaches to learning, and motivation toward learning are key components that instructors can exploit to their advantage.

**Teaching/Learning Strategies**

In a widely viewed video animation of a lecture by Sir Ken Robinson (RSA Animate, 2010), Robinson is heard discussing how the traditional educational setting has failed to educate students in a way that incorporates different learning abilities and styles. Although the illustrations made for the lecture paint the picture of a child sitting in the classroom, and at times non-responsive, the message applies to college and university students as well. Teaching to students as if they all learn in exactly the same way might not be the most effective way for them to learn. The traditional method of teaching in a one-size-fits-all model is outmoded. This section on teaching and learning strategies, coupled with the following section on curriculum development, underscores the
importance of considering the influences on teaching/learning and how teaching/learning approaches need to accommodate not only the subject matter but the most effective ways to help students gain the desired knowledge and skills.

One of the most important shifts that occurred in teaching is the shift from teaching as a way to impart knowledge to teaching as a way to help students learn. This supports Sir Robinson’s assertion that instructional methods need to change. Barr and Tagg (1995) present this paradigm shift as two ends of a continuum with what they term the “instruction paradigm” on one end and the “learning paradigm” on the other. Their purpose was to describe what was happening in American higher education. They agreed that the shift was necessary; however, “this shift changes everything” (para. 1). In the instruction paradigm, the teacher is viewed as the expert, the one who shares his or her knowledge with the students. The focus is not on what students learn but on what they are taught. In the learning paradigm, the focus shifts to what the student learns. Although both paradigms operate with the understanding that each student presents differences in how he or she learns, only the learning paradigm takes into consideration the learning environment and the types of activities designed for the student.

The comparison also emphasizes how different aspects of the institution are reflected within the paradigms (Barr & Tagg, 1995). Under the instruction paradigm, the mission of higher education institutions is to “provide instruction.” Success is measured by the quality of the entering students. Faculty members are viewed as lecturers and they operate independently from the students. In the learning paradigm, the institution’s mission is to produce learning. Success is measured in the learning and student outcomes and the quality of the institution’s graduating students. Teachers design learning methods
and help develop the abilities of their students. Teachers and students work together. Although there seems to be little room for both paradigms to coexist, both are useful, depending on what the instructor wants to accomplish. When instructors share their expertise with the students, for example, they operate under the instruction paradigm. The authors acknowledge this to be true and recognize that the learning paradigm includes some of the aspects of the instruction paradigm. The learning paradigm “expands the playing field and domain of possibilities” (Barr & Tagg, 1995, The Paradigms) for colleges and universities.

The discussion on the paradigm shift highlights the differences in the teacher/student relationship. There are times when the teacher is more detached, for example, when presenting his or her own experiences or expertise to the class. There are also times when the students are more involved, such as during a class discussion. This relationship can also be conceptualized in three ways. The teacher-focused relationship is what the instruction paradigm described as putting the teacher in the expert role; the teacher provides knowledge to the student (Light et al., 2009). Teaching focuses on the content and the teacher is responsible for the quality of the knowledge. In the student-focused relationship, the student is more active. The teacher finds avenues that connect students to the subject matter. The third relationship domain is described as learning-focused, with teaching as a facilitative process. This is equivalent to what Bain (2004) describes when he addresses assessment approaches. The instructor helps students construct knowledge, however, learners take responsibility for their own learning; they provide the meaning (Light et al., 2009). Each of these teacher-student relationships has its place within the teaching/learning situation and can be utilized for the highest gain.
As much of the discussion of learning has emphasized, students learn in different ways based on many factors. The job of teaching is not only based on understanding how students learn and what influences learning; teachers must also help students bridge the gaps in learning (Figure 2). These gaps exist between recall and understanding, understanding and ability, ability and wanting to, wanting to and actually doing, and actually doing and changing (Light et al., 2009). From the first gap (recall) through the last (changing), each successive area encompasses the previous one(s). Teachers find ways to bridge these gaps so that they can meet learning objectives. For example, providing hands-on experiences assist students in progressing from understanding to the ability to do something.

Figure 2. Student learning gaps. Adapted from Learning and Teaching in Higher Education by G. Light, R. Cox, and S. Calkins, p. 49. Copyright 2009 by SAGE Publications.
The previous paragraphs explored the important shift in paradigms, the teacher/student relationship, and learning gaps that form part of the instructor’s world. Teachers build on this background information and utilize it within the classroom to design concrete (or abstract) experiences for students. Bain’s (2004) study on what the best college teachers do illustrates this well. He set out to find out what the most effective teachers do in their classrooms to help students learn. He recognizes that teachers approach their lessons differently and that there is no one right way to teach. His interviews with effective teachers helped him identify several themes. One of the findings was that effective teaching begins with an understanding of human learning and understanding the subject matter. Teaching also begins with the learning objectives, what the teacher wants to accomplish. The most effective teachers began with the end (or results) in mind. This parallels the constructive alignment model that begins with the learning outcomes. The activities that follow are designed to achieve the outcomes. This is what the teachers in Bain’s (2004) study did.

The teachers in the study also trusted that their students wanted to learn (Bain, 2004). They evaluated their own teaching so that they could identify ways to improve. Then, they approached assessment. Their goal was to develop deep thinkers rather than surface thinkers. The teachers provided challenges for the students, requiring them to question their own thinking. Intrinsic motivation was developed. The tasks the students were asked to perform were used to build confidence. The teachers helped students “understand, apply, analyze, synthesize, and evaluate evidence and conclusions” (p. 46). By doing all of this, a “natural critical learning environment” was created. This environment was a safe place for students to be accepted and challenged; it was a place
for them to grow. Teachers were flexible and they used whatever strategies helped students learn. When the teachers considered assessment, they wanted to find what worked for their students by gathering information about the students beforehand. As a way to improve the classroom experience for others, teachers collected feedback from the students and their own peers.

As emphasized above, effective teaching utilizes whatever strategies teachers believe to be important to help students gain the knowledge and skills set out in the learning objectives. To attempt to describe a comprehensive list of strategies or methods would be a challenge. The approaches that teachers use to help their students learn are only limited by the teachers’ imaginations and own experiences. Lecturing, one of the most common teaching methods, has received negative criticism; yet it is no more or no less effective than other methods (Light et al., 2009). It can serve large groups of students and help students start to recognize information, the beginning stage in their learning process. Small-groups, project groups, assignments, exams, and distributed materials also provide ways of teaching and helping students learn. Not every method or mode of teaching/learning works for every student, so having a variety of methods within one’s repertoire is important.

Technology also plays a role in teaching, especially with the growth of technological tools that can be directly utilized with teaching and learning. The teacher bears the responsibility for how this technology is incorporated into the classroom (or outside the classroom) (Kuhlenschmidt & Kacer, 2010). Such tools have been used throughout the history of education. Overhead projectors were once a major method of sharing information in the classroom. These have now been replaced with ceiling-
mounted digital projectors that are wired to computers below. Face-to-face instruction once dominated teaching. Today it is supplemented or replaced with distance education, which has become a growing industry for higher education. There are different ways to view the impact of technology on education. One way that technology has impacted teaching is for the better. For example, clickers allow students to respond to a question the teacher asks; results are then displayed on a screen in front of the classroom. The teacher can then use the results to determine the direction of the lesson. Teachers can also reach students easier, such as through email messaging. One way that technology has made teaching worse is the way it vies for and distracts students’ attention. Technology also changes rapidly, making it difficult for teachers to master it fast enough to take full advantage of it. Technology might also have no real impact on teaching because it is not the tool that is the main subject in the classroom; it is the way the tool is used to effect learning. This last statement sums up the most important point about technology and teaching/learning. Technological tools fall in with all of the other techniques/methods/strategies that teachers have in their repertoire. How and why they are used are key to effective learning.

This section on teaching/learning strategies describes some of the ways teachers approach the learning situation. It also emphasizes their crucial role in creating an optimal learning environment. Teaching is not just providing information; it is about developing students into active participants in society. There are many elements that can affect teaching; several have been discussed to illustrate the intricacy of the teaching/learning situation. Teachers must face a society affected by globalization, technological advances, economic turbulence, underprepared students, and the pressure to
demonstrate accountability, to name a few. As society continues to change, so too must teaching in order to meet the needs of the students who expect to participate in it.

**The Curriculum**

The curriculum describes how teachers will achieve the learning objectives they have identified. It is affected by many of the same influences identified above in the discussion of teaching/learning strategies. Some of these influences will be discussed in more detail, as they will bring the curriculum’s importance to the forefront.

The curriculum is defined as an academic plan that is designed to guide students in learning what is most important in a particular subject area (Lattuca & Stark, 2009). It includes eight components – the purposes, content, sequence, learners, instructional processes, instructional resources, evaluation, and adjustment. The purposes are descriptive statements about the type of knowledge, skills and attitudes instructors want students to gain. These are the intended outcomes. Content refers to the specific assignments that will enable students to obtain the knowledge and skills. Sequence refers to how the information is introduced to the students so that they build their knowledge and skill base. The learners’ component takes into account the characteristics and needs of the students. The curriculum also considers the instructional approaches that will be used as the most effective means of helping students learn. Instructional resources include materials and settings for the course, such as textbooks, laboratories, and practicum sites. Assessing the curriculum and learning outcomes constitute the evaluation component. Feedback helps the teacher improve aspects of the course. The final component of the curriculum addresses this improvement. Aligning each of these components properly promotes the development of deep processing (Light, Cox, &
The curriculum not only outlines assignments for students, it also expresses the intent of the teacher (Lattuca & Stark, 2009). It takes into account the abilities of the learners; and it evolves in response to feedback.

There are many influences that affect the development of a curriculum. Over the course of many years, reports have been critical of the undergraduate curriculum. They have also stressed the importance of making changes and offering suggestions. Reports published in the 1980s noted that business leaders were not satisfied with the quality of the graduates they were receiving (Dezure, n.d.). The leaders cited the inability of their college graduate employees to solve problems, work collaboratively, and make ethical decisions. Government agencies, professional associations, and others pressured institutions to demonstrate more accountability. The change in demographics that increased student diversity at colleges and universities also demanded more attention. The reports mirror the issues still prevalent in American higher education today. When employers were recently surveyed to voice their opinions on the preparation of college graduates (Hart Research Associates, 2010), only a fourth of them thought that colleges and universities were doing well in preparing graduates for the global economy. Although this report speaks to the global economy in light of the recent economic downturn, it underscores the belief that graduates’ knowledge and skills have not kept pace with societal needs. The report, while promoting a liberal arts curriculum, emphasizes the importance of providing college students with a curriculum that will enable them to be full participants in a changing society.

This section on curriculum development emphasizes that the curriculum is a plan for helping students gain the knowledge and skills that pertain to a specific subject. While
the instructor develops the curriculum, there are outside influences that also shape it. Both the curriculum and teaching/learning strategies, which evolve from the curriculum, shape student learning and are key components in preparing students for the future.

**Assessment of Student Learning**

Measuring student learning is not an easy process. There are many methods available. In addition, as the discussions thus far have pointed out, having a fundamental understanding of the learning process and its influences are essential. Just as there is no one way that people learn, there is no single comprehensive method for assessing all types of learning. It is an integral component of the constructive alignment framework. Assessment can be approached from different directions and provides valuable feedback, not only to the instructor, but to the student as well. Both benefit from the identification of weaknesses and strengths. Students can use the results of assessments to improve their learning approaches; instructors can use the results to adjust how the course is conducted (Light, Cox, & Calkins, 2009).

While the recent emphasis on accountability has brought assessment to the forefront, it has been a topic of discussion for some time, at least since the mid-1980s (Ewell, 2009). Since that time, there were tensions that existed between accountability and assessment. In order to manage these tensions, Ewell (2009) suggests including assessment in the curriculum. This agrees with Lattuca & Stark’s (2009) definition of a curriculum. However, assessment should be viewed as more than a method for assigning grades (AACU, n.d., Higher Learning). Students should receive a more significant benefit.
Since assessment and evaluation are oftentimes used interchangeably, to avoid confusion, definitions for both are offered. Assessment is defined as “gathering of information about student learning, which may be qualitative or quantitative in nature and used for some purpose” (Light, et al., 2009, p. 201). Evaluation, on the other hand, is the appraisal of teaching (Bain, 2004). It refers to how we judge the value and quality of education and includes programs, courses, teachers, books and other items (Light et al., 2009). Thus, assessment makes up part of the evaluation process. Both assessment and evaluation emphasize the learning process rather than performance as in traditional thinking (Bain, 2004). However, the major goal of assessment is to “help students learn to think about their own thinking so they can use the standards of the discipline or profession to recognize shortcomings and correct their reasoning as they go” (Bain, 2004, p. 160).

As mentioned previously, assessment can be used to help students improve their learning and also to assign grades. The former is referred to as formative assessment, while the latter refers to summative assessment (Light et al., 2009). Formative assessment examines the student’s level of learning when compared to specific standards (Afflerbach, 2011). More specifically, it refers to “development, improvement and learning” (Light et al., 2009, p. 203). Information obtained from this type of assessment can motivate students to learn, offers feedback for improving learning, identifies weaknesses and strengths, and helps students reflect on their learning in a critical manner (Light et al., 2009). In other words, this is a means of examining learning as it is occurring (Formative Assessment, 2011). Summative assessment examines the end results and focuses on accountability and performance (Light et al., 2009). This is used to
pass or fail students, grade or rank them, or predict future success in courses or on the job.

Another way to view assessment relates to the type of teaching used to effect learning. Didactic teaching is teacher-centered, with the teacher acting as the expert who imparts knowledge (Bain, 2004). Assessments fitting this type of teaching would include objective, multiple-choice exams that emphasize memory and rote learning. They are performance-based (Bain, 2004). Norm-based assessments use grades to distinguish students from their peers (Light et al., 2009). The other type of teaching is facilitative and is learner-centered. The instructor occupies the facilitator role and interacts with students using conversations rather than lectures (Light et al., 2009). Criterion-based assessments would fall into this category since they compare students’ performances against a predetermined set of criteria; students, then, have the ability to reach their highest level of achievement and see how far they have progressed. One example is the project assignment, which focuses on improving thinking processes.

Grades are not a comprehensive measure of learning, although they can serve as one indicator (Middaugh, 2007). They do not accurately reflect a student’s knowledge. Assessment should be used to provide evidence of student competencies, skills, and knowledge that fit with institutional and higher education goals; it should be grounded in the disciplines. The focus should be on the collective cognitive gains that a student achieves. Multiple measures such as tests or test items produced by the institution, standardized tests, and student portfolios, for example, could capture these gains. Assessment occupies an important position in the continuous improvement of teaching and learning. As Middaugh (2007) states, it need not be restricted to only broad
institutional applications. By capturing many different types of assessment, student learning is more fully appreciated. This approach also accommodates students with different learning styles.

Although assessment has been discussed as a priority for American higher education for decades, pressure continues to be applied to colleges and universities to adopt an inclusive stance on its use. Dwyer, Millet, and Payne (2006) promote a culture of evidence that takes into consideration the many domains of student learning. They state that, “the lack of a culture oriented toward evidence of specific student outcomes hampers informed decision-making by institutions, by students and their families, and by the future employers of college graduates” (p. 1). From their perspective, creating this culture of evidence includes: readiness for the workplace and possessing general education skills; having content knowledge and discipline-specific knowledge and skills; possessing soft (or non-cognitive) skills that promote successful teamwork, creativity, and communication with diverse individuals; and student engagement, which reflects the student’s active participation in their own learning process. These domains are considered critical for assessing student learning and learning processes.

One of the recommendations that Dwyer et al. (2006) offer is the creation of a national comprehensive system of accountability for student learning that would concentrate on the major learning dimensions. They outline several key features of the proposed assessments, including testing only a representative sample of students and developing appropriate measures to assess students when they enter college and when they graduate. This would require colleges and universities to adopt the same set of learning outcomes, for example, the liberal education outcomes suggested by the AACU
(n.d., Liberal education). However, this recommendation proposes the creation of a standardized examination that promotes surface learning rather than deep learning. This type of examination also is far removed from the teacher-learner relationship that has been established in the classroom. While the system could create comparability across institutions (Dwyer et al., 2006), it might not demonstrate the type of learning it intends to demonstrate. It could favor students who are more adept at taking standardized examinations; and it would only capture a sample of students that may not be truly representative of the entire student population.

While the more traditional view of assessment originates within the classroom or institution, assessments can also be conducted by outside entities, but not necessarily using standardized examinations as Dwyer et al. (2006) recommend. The Malcolm Baldrige National Quality Award Program (MBNQA), named for a former Secretary of Commerce, was created in 1987 by the U.S. Congress to reward organizational excellence (Ruben, 2007). In addition to recognizing excellence, the program encourages outstanding organizations to share information on excellence. It also promotes the implementation of successful organizational principles and practices. Award programs exist at the local, state, regional, and national levels. The framework of the MBQNA program was adapted for higher education and is comprised of seven categories: Effective Leadership; Strategic Planning; Customer Focus; Measurement, Analysis, and Knowledge Management; Workforce Focus; Operations Focus; and Results (National Institute of Standards and Technology, [NIST], 2011-2012). The last category, Results, the one most applicable to this study, encompasses the student learning and process outcomes and addresses the key student learning results as well as process effectiveness.
and efficiency results (NIST, 2011-2012). Institutions are required to submit evidence that shows the quality and effectiveness of programs, departments, or the institution (Ruben, 2007). While the Results section focuses on student learning and outcomes, the award emphasizes excellence in all areas of operation.

Throughout this dissertation, a link has been established between assessment and learning. One of the ways to influence student learning is through the type of assessment that is used. Part of the discussion thus far focused on promoting deep processing rather than surface learning. Research by Scouller (2000, 1998) and Scouller and Prosser (1994) illustrate this point. They examined the learning strategies and approaches students used in relation to a multiple-choice question examination, an assignment essay, an examination essay, and a short-answer examination. They conducted surveys of college students to elicit their preferred study strategies for the examinations or assignment administered. The results demonstrated a definite preference for one or another learning strategy for a particular assignment or exam. There was also a correlation between surface learning or deep processing and the type of exam or assignment. Results indicated that careful selection of an assessment method that encouraged students to develop higher order intellectual skills, to use deeper learning approaches, and demonstrate development not only improved the quality of learning, but also led students to increasingly pursue higher grades.

Assessing Learning Outcomes

For grading and feedback purposes, learning outcomes can be expanded into rubrics. The rubric is “a criterion assessment grid [] defined to evaluate student work, by identifying different degrees of quality for individual criteria” (Light, Cox, & Calkins,
An analytical rubric defines the levels of achievement for each criterion. Each level within the criterion specifies exactly what the student must be able to demonstrate in order to perform at that level. A holistic rubric, on the other hand, groups all criteria for a particular achievement level together. Thus, for each level, the student must be able to demonstrate all or most of the listed criteria in order to perform at that level. An advantage of the analytical rubric is that it provides the student with detailed feedback. A disadvantage is the length of time it may take an instructor to use the rubric for grading. An instructor can grade more quickly with the holistic rubric, but specific details on what the student needs to do to improve are not provided. Holistic rubrics are more summative, as opposed to the analytical rubrics, which are more formative.

Broad learning outcomes that are defined at the institutional level are also useful for the kind of assessment that Dwyer et al. (2006) recommend. The AACU (n.d., VALUE rubrics) chose analytical rubrics for its fourteen learning outcomes, which were based on existing learning outcomes and input from faculty from various American colleges and universities. Because they are broad in nature, careful preparation must be done in order to use them properly. Siefert (2011) describes a reliability study in the general education program at the University of North Carolina –Wilmington. Faculty members evaluated four of the AACU’s VALUE initiative rubrics – written communication, inquiry, critical thinking, and information literacy. The generality of the rubrics posed some difficulty for using them for assignments, so the scorers attended workshops to better understand the rubrics and to receive practice in using them. The study results helped faculty members learn more about their students and identified students’ strengths and weaknesses. One particular area that needed to be improved was
critical thinking. This result helped spur curricular change. The author admits that there are challenges that will have to be addressed in order to implement the scoring process on a wider scale. Proper training for all scorers must be done to ensure norming. She expects that more practice on sample assignments from the large number of courses in the general education program will allow generalization. As the author indicates, one of the most important improvements the institution needs to consider is aligning the learning outcomes of the assignments/courses to the rubric.

Institutions that choose to develop their own rubrics for learning outcomes assessment must also conduct reliability studies. A faculty focus group in the psychology department at California State University–Northridge developed a rubric to assess four of their student learning outcomes (Thaler, Kazemi, & Huscher, 2009). Instructor-given grades on student research manuscripts were compared to the scores that resulted from the rubrics. Random selection was used to select students’ manuscripts from all sections of a research course. The rubric was revised twice after rater feedback. The results indicated strong inter-rater reliability. Intra-rater reliability was not determined because each rater only scored one assignment. The authors admit that this and the small sample size are limitations of their study. It provides a starting point for them, however, to conduct further studies to ensure that they have a reliable means of assessing their learning outcomes.

The complexity of integrating learning outcomes and assessment at multiple levels should not be underestimated. Galle and Galle (2010) examined the integration process at three institutions. Each one focused on integrating learning outcomes and the assessment of those outcomes at the institution, general education, and academic program
levels. Although the reasons behind integrating learning outcomes and assessment varied by institution, the steps in the process were found to be similar. One institution was encouraged by the development a new core curriculum. Another followed up on a faculty retreat discussion. The third institution was preparing for an accreditation self-study. Each of the institutions began by discussing the alignment of university learning outcomes with the general education learning outcomes. Training faculty groups on using the outcomes and selecting relevant measures for them occurred in the second stage of the process. They typically started with the general education outcomes. In the last stage, training was offered to the faculty who teach the upper level courses so that they could implement assessments that were built into the courses. The authors’ review of the integration process at these institutions highlighted that, although it could take from one to three years to integrate learning outcomes for all three levels, sometimes the process stalls at one point. Another finding was that neither institution truly committed to completing all three levels. The reasons for the stoppage are unclear. However, because the process is complex and does require such commitment, allowing sufficient time to complete the process is important as is maintaining momentum for completion.

While the pressure to implement assessment as a way to demonstrate student learning has been underway, there has also been resistance to the movement. Bennett and Brady (2012) believe that the movement “is a danger to students because it pretends that their problems have more to do with easily quantifiable outcomes” (p. 41). However, as the discussion on learning outcomes has indicated, the process is not easy but seeks to improve learning in a demonstrable way. The authors further note that the type of testing that is promoted benefits the test makers. They also state that the data that would result
from outcomes assessment would not take into account individual differences, willingness, and aptitude. When Marrs (2009) interviewed three faculty members from different disciplines at a small liberal arts institution about their attitudes towards outcomes assessment, one or more saw it as an expression of mistrust in their ability to teach. While this small sample is not representative of the faculty population, it serves to express some of the opinions of assessment that do exist. One opinion expressed over a decade ago was that the emphasis on assessment was misguided (Wellman, 2000). The author called it “an imperfect science.” She noted that, at the time, there was not a common understanding nor easy transferability of the measures between different institutions. The learning outcomes that are developed through Tuning are designed to address this, at least at the program level.

**Summary**

Student learning is complex and requires not only knowledge of how people learn, but also an understanding of the strategies that students use to construct knowledge. This chapter reviewed the constructive alignment theoretical framework around which the topic of student learning is discussed. The theory emphasizes the coherence between learning outcomes, teaching and learning activities, curriculum, and assessment. Therefore, learning outcomes were discussed in some detail, including the language used to write them. The specificity of the outcomes renders them understandable and measurable. Several learning theories provide an understanding of the learning process, which helps instructors configure the learning environment. Other factors that affect learning offer further assistance in developing learning activities and assignments. The discussion of teaching/learning strategies and the curriculum
demonstrate the way knowledge and skills are transmitted to the students and the influences that impact what knowledge and skills are taught. The discussion of the final piece of the theoretical framework – assessment – defines the purposes of assessment, different approaches to assessment, and highlights studies that demonstrate how assessment can be used to demonstrate and improve student learning.
CHAPTER 3: METHODOLOGY

This chapter presents a qualitative single-site case study research design for this study. The rationale and advantages for using the qualitative approach and its applicability to this study are discussed. The study is bounded by one academic program at a land-grant university located in the West. The institution was part of the 2009 Tuning USA pilot project sponsored by the Lumina Foundation for Education (Lumina Foundation, 2009). The project resulted in the collaborative development of learning outcomes and competency levels for those outcomes in several academic disciplines. The selected academic program has been operating under the new learning outcomes for two academic years; therefore, this study was intended to investigate the early effects of this change, specifically on faculty and students.

According to the theory of constructive alignment, once the learning outcomes (intended learning outcomes) have been established, the rest of the teaching and learning activities must be coordinated with them effectively (Biggs & Tang, 2011). The “intended learning outcomes are central to the whole system” (p. 104). The theory posits that teaching and assessment must be aligned in a way that helps students achieve the outcomes.

To explore this theory more closely, participants for this study were faculty members who utilize the learning outcomes to guide their instruction, curricula, learning activities, and assessments. Data was collected through interviews and course syllabi. To determine the impact of the learning outcomes on teaching and learning, the following
research question and sub-questions were used in order to design the study and were used for the analysis phase of the study:

How has the use of the tuned learning outcomes impacted teaching and learning?

1. How have the tuned learning outcomes impacted the curricula?
2. How have the tuned learning outcomes impacted teaching/learning practices?
3. How have the tuned learning outcomes impacted assessment?
4. How have the tuned learning outcomes impacted learning?

The rest of this chapter is organized into sections that explain how these research questions were addressed through this research project. First, the research design is discussed, followed by details on using the case study approach. These are followed by descriptions of the context of the study, participant selection, and the role of the researcher. Details on the two forms of data collection – interviews and documentation – are also provided. The time frame for the completion of the project is offered, followed by a detailed explanation of data analysis, which includes the coding methods that were used. The last sections in the chapter address validity and reliability, ethical considerations and finally, limitations of the study.

**Research Design**

The development of learning outcomes through the Tuning process has just recently been introduced in the United States (The Lumina Foundation, 2009). After the initial stages of the Tuning process were complete, participating colleges and universities began to utilize the new learning outcomes within their individual departments at their institutions. This required certain changes within the courses taught in those departments.
Therefore, qualitative single-site case study methodology was selected to investigate these changes. Qualitative research is useful when an issue needs to be explored and for uncovering specifics that do not lend themselves to easy measurement (Creswell, 2013). The in-depth exploration of the use of the learning outcomes is a hallmark of qualitative research (Cohen, Manion, & Morrison, 2011; Creswell, 2013). The focus on a single issue provides insight into and a more complete understanding of this complex process (Cohen et al., 2011). Case studies, in particular, lend themselves well to examining real-life issues (Cohen et al., 2011). More details on using the case study approach are provided in the following section.

Another aspect of using the qualitative approach is the ability to provide rich and thick descriptions by obtaining information directly from those involved in the use of the new learning outcomes (Tracy, 2010). Certain information about the effects of the new outcomes might otherwise be difficult to obtain. This richness derives from the use of multiple data sources and adds the necessary rigor to the process (Tracy, 2010). This triangulation of data sources also strengthens the reliability of the study (Cohen et al., 2011). The thick descriptions add credibility to the study by offering a generous amount of detail that brings the reader into the research setting (Tracy, 2010); as many aspects as possible can be brought to life.

The research generated themes and patterns. Thus, the use of an interpretive approach attached meaning to these themes and patterns by trusting the participants to share their views on the issue being studied (Creswell, 2013). The experiences and views of the participants were treated as valuable forms of information (Hesse-Biber & Leavy, 2011). The types of information obtained from faculty members include how they
developed different aspects of their courses, including curriculum development, learning activities, and assessments with respect to the new learning outcomes. The frontline views of these changes provide a window into the processes as the faculty members experienced them.

**Case Study Approach**

This study on learning outcomes represents a single contemporary issue, for which case studies are ideal (Yin, 2009). This small arena allows a more detailed account and thus, meaning can be attached to it. The research questions ask *how* instructors made use of the tuned learning outcomes and *how* teaching and learning activities were affected. This also supports the use of the case study approach, according to Yin (2009), because these types of questions seek an understanding of an issue that cannot be measured with ease (Cohen et al., 2011). As Yin states, “such questions deal with operational links needing to be traced over time, rather than mere frequencies or incidence” (p. 9). Thus, this study provided information related to the beginning use of the new learning outcomes through the assessments used to measure their effectiveness. This is one of the strengths of using the case study approach; events can be constructed in chronological order, allowing events to be presented as they unfolded (Cohen et al., 2011). In addition, using the single-site design allowed the complexities and insights of the study to be brought to the fore. Interested parties can judge for themselves how best to utilize the results and implications (Cohen et al., 2011).

In addition to answering certain types of research questions, case studies also utilize multiple sources of information through triangulation (Yin, 2009). This takes into account that there are many variables at play and that it is difficult at times to isolate their
individual contributions (Cohen et al., 2011). Triangulation also allows the researcher to collect information that might not be available from just one source. Triangulating data sources and probing participants in interviews provides more information from which themes and patterns can be detected. Relying on only one source of information could prove insufficient for providing an in-depth understanding of the issue (Creswell, 2013). It could also bias the research (Cohen et al., 2011).

The data sources for this study included interviews, documentation and a video recording. The interviews provided first-hand accounts of the teaching and learning experiences. The documents provided information on the implementation of the learning outcomes within the courses the professors taught and the communication of the outcomes to interested parties. The video presentation provided information from several professors in the department who were influenced to make changes because of the new learning outcomes. Information provided by the participant was also compared to information in the documents and video, adding strength to the study (Cohen et al., 2011). This type of convergence of multiple data sources helps to prove the facts in the study, as shown in Figure 3.

![Triangulation of data sources](Figure 3. Triangulation of data sources. Based on Convergence of Evidence model provided in Yin (2009).)
**Contexts and Access**

This research study was conducted in one academic department at one of the Tuning USA pilot project institutions. This public, land-grant research institution serves nearly 26,000 students. Two individuals, recommended by the pilot project program officer, were contacted via email in the summer of 2011 to set up a preliminary meeting. The meeting took place over Skype, a video-audio-text messaging computer communication technology, in the fall of 2011. Since both of these individuals served as teaching faculty, they agreed to be participants in the study. Other faculty members in the department were solicited via email for participation. All participants were sent an introductory letter, detailing the intent of the study, the types of information sought for the study, and contact information. Once they agreed to participate, a phone interview was scheduled and consent forms were sent. One interview was conducted via Skype, while the other four were conducted over the telephone. Documents were collected from the department and institutional websites. The video was obtained from a separate location on the institution’s website.

**Participants and Sampling**

Representativeness of the sample, along with the style of the research, can influence the number of participants (Cohen et al., 2011). A rule of thumb Cohen et al. provide is that where there is more heterogeneity, there should be a larger sample to account for the variety. However, for this study, faculty members within one academic program make up the participant pool, thus, representing a more homogeneous group. Cohen et al. also add that the study should provide a large enough sample to produce “thick description” and rich data, while avoiding data overload. The intent is to obtain a
large amount of detail in order to uncover the particular and the specific in regards to the newly instituted outcomes. Five faculty members agreed to participate in the study. All of the faculty members for this study teach both lower level and upper level undergraduate courses. The breadth of coverage provided adequate representation of the departmental offerings. This purposeful or purposive sampling allowed this researcher to obtain information directly from those involved in the use of the new learning outcomes (McMillan, 2008; Cohen et al., 2011). These are the most knowledgeable individuals who provided the most detailed information needed in order to generate themes and patterns for analysis.

**Role of Researcher**

This researcher collected data through interviews and examination of documents related to the use of the learning outcomes (Creswell, 2013). Personal values, biases, and worldviews could potentially affect how the information is viewed and how the data is interpreted (Cohen et al., 2011; Nature of Qualitative, n.d.). Therefore, self-disclosure will be evidenced through reflexivity. This allows readers to understand the researcher’s contribution to the collection, analysis, and interpretation of the data. This study was undertaken because the Tuning process appeared to be an attractive means of answering the call for more accountability on the part of colleges and universities within the United States. Disclosing this view and any underlying assumptions during the research process will demonstrate researcher authenticity and facilitate more objectivity in the data collection, analysis, and interpretation. Taking responsibility for these assumptions will generate the desire to use a wider lens rather than a narrower one.
Data Collection

One of the most important aspects of data collection is the organization of the process. For this project, data collection followed a set of connected steps. Some of these steps were completed prior to data collection. For example, the site was selected in the fall of 2011. This is the first step recommended by Creswell (2013). The site was selected based on the recommendation of the Lumina Foundation Program Officer in charge of the Tuning USA Pilot Project who served as the gatekeeper. Initial introductions were made via email and followed up with video conferencing via Skype. This partially fulfilled the second step – building rapport. Future communication, and rapport building, with participants took advantage of this technology and the telephone.

The third step in the process was purposeful sampling (Creswell, 2013), which was completed through email introductions and invitations to professors in the selected academic department. The fourth step of data collection involved conducting the interviews and collecting documentation. Documentation included course syllabi for courses taught after the introduction of the learning outcomes. All of the courses were in the discipline of the academic department. No more than four syllabi were collected for each professor. Since teaching schedules varied, syllabi for upper and lower level courses were obtained for four of the participants, while course syllabi for only one level were obtained for the remaining participant. Documentation is a stable form of information and offers an unobtrusive means for gathering data (Yin, 2009). During the next step, the interviews were audio-recorded using a high-quality digital recorder (Creswell, 2013). This allowed the interviews to be transcribed for analysis, which is discussed later in this chapter.
The last part of collecting the data involves proper storage of the information (Creswell, 2013). The interview recordings, as well as the collected documents and a video presentation, were stored on a password-protected computer. Generic identification codes were assigned to interview participants to ensure confidentiality. Related information was also stored in this manner. All of the files were backed up on an external data storage device. The data were available for review to the dissertation committee members. Coding samples were sent to the dissertation committee director and chair for review. Making the collected data available to committee members allows them the ability to follow the chain of evidence – the trail of information from its initial capture to the end stage of the project when the results and conclusions are presented (Yin, 2009).

**Interviews.** The primary source of information came from interviews with faculty members. This focused, insightful approach to obtaining information is one of the most important sources for case studies (Yin, 2009). The interview process followed Creswell’s (2013) conception of the interview. He views interview inquiries as a logical progression of steps that start with developing a theme for the inquiry, to designing the study, to interviewing, to transcribing, to data analysis, to verifying the validity of the study, to reliability of the findings and their generalizability, then to reporting the study.

As Creswell (2013) suggested, the theme of the study was derived from the research questions posed. For this study, the theme focuses on the impact of the tuned learning outcomes. The study – a single-site case study – was then designed with the research questions in mind. Participants were asked to provide information on their use and assessment of the tuned learning outcomes. Procedures to increase reliability and
validity were also followed; and the information was analyzed, coded, and reported. More specifics on the interview process follow.

The interviews were conducted as “a two-person conversation initiated by the interviewer for the specific purpose of obtaining research-relevant information, and focused by [her] on content specified by research objectives of systematic description, prediction, or explanation” (Cannell & Khan, 1968, as cited in Cohen et al., p. 411). The interview format not only provided a means of collecting in-depth information, it also allowed misunderstandings and misinterpretations to be clarified immediately (Cohen et al., 2011). Also, participants were probed for further information on related topics that arose during the interview, thus allowing a fuller understanding of the process to emerge.

Of the types of interviews described by Hesse-Biber and Leavy (2011) and Cohen, Manion, and Morrison (2011), the semi-structured or standardized open-ended interview, resp., was used for this study. The participant had more freedom and the researcher allowed the respondent some level of control over the interview (Hesse-Biber & Leavy, 2011). The same questions (see the Interview Guide in Appendix E) were posed in the same order to each participant to create a more comparable set of responses (Cohen et al., 2011). Yet there was enough flexibility to allow the participant ample time to respond. The exchange flowed more naturally and strayed into unanticipated, yet fruitful, areas. However, there were instances during the interviews when it was necessary to stray from the questioning order and seize upon research-related information as it arose. An example of the use of the semi-structured format is found in a study on student engagement (Exeter at al., 2010). The authors interviewed six course coordinators on practices intended to engage students in the learning process in very large lecture
classes. The authors found that students in these classes could benefit from teaching techniques usually employed in a small class setting.

For this study, each faculty member contributed his or her own unique perspective on the use of the learning outcomes. The open-ended or semi-structured format allowed each participant to share his or her views and provide data, which was unique to each course taught. Their experiences were also comparable because they shared the same responsibility to provide coherence in their lessons by targeting the outcomes in their approach to facilitate student learning.

Telephone or Skype interviews were used for this study and offered their own set of advantages over the in-person interviews. The primary reason for using these technologies was geographical separation from the research site and that the study was not site-dependent (Cohen et al., 2011). These technologies also are low cost and convenient to use. They are also less time-consuming than working in the field. This researcher was also able to exercise greater uniformity and control when conducting the interview because of the standardized list and order of the open-ended questions. However, some variation in the question order occurred due to the natural flow of the conversations with the participants. Another advantage for using distance interviews was that interviewer effects were minimized.

**Documentation.** The second source of information was documentation, which included course syllabi for courses the professors taught after introduction of the new learning outcomes, the undergraduate requirements from the department website, and the department information that was included in the online general catalog for the university. Documentation is an unobtrusive means of gathering pertinent information (Cohen et al.,
2011) and the use of documents applies to all case study topics (Yin, 2009). Documents have the advantage of being stable pieces of information; once obtained, they can be reviewed as many times as necessary (Yin, 2009). They also contain exact information – names, references, and other specific details. A further advantage is the time span that can be covered. Information related to the tuned learning outcomes can be traced over many events and settings.

Documents played a vital role in this research study by substantiating and supplementing information that participants provide through their interviews (Yin, 2009). Any contradictory information is addressed. Yin (2009) adds that inferences can be made from documents as well. For example, names on the routing list might generate new questions. However, he cautions that these inferences are not findings but they could lead to more useful information for the study.

Research using documents as one source of data has yielded useful results. For example, Borrego and Cutler (2010) used document and content analysis to examine the constructive alignment of graduate interdisciplinary programs. By analyzing funded government proposals, they discovered that assessments were not well aligned with learning outcomes. In their view, this led to weak graduate curricula. They then offered suggestions on ameliorating the inconsistencies. The authors valued the ability to obtain more information from the documents than they could have obtained through a survey.

**Video Presentation.** Audiovisual materials are one of the four information types that Creswell (2013) mentioned in his review of the many forms that exist for analysis. A search for additional pertinent information on the department’s website resulted in the discovery of a link to a video that was created in 2012. In the video, professors in the
department discussed innovative ways they taught their courses, especially as a result of using the learning outcomes developed through the Tuning process. The video was viewed twice. The first viewing ensured that it was appropriate for the study and the second viewing was used to summarize sections of the video for coding in dedoose™.

Transcription. Once the interviews were audio-recorded, they were transcribed. This ensured that the content of the interviews could be reviewed thoroughly for coding purposes. Although there are various views on transcription in the literature (Davidson, 2009), the ones most salient with this project are provided by Oliver, Serovich, and Mason (2005) and Lapadat and Lindsay (1999). Oliver et al. (2005) regard “transcription [as] a powerful act of representation” (p. 1273). Lapadat and Lindsay (1999) believe that transcription “facilitates the close attention and the interpretive thinking that is needed to make sense of the data” (p. 82).

A main goal of this research was to provide rich and in-depth information; therefore, the highest and most natural level of transcription was desired (McLellan, et al., 2003). This naturalized transcription captures all of the information from the interview, including utterances and fillers (Oliver et al., 2005). For this research project, the utterances and fillers that could be clearly understood were recorded. While care was exercised in capturing as much of the content as possible from the recordings, the process of transcribing is still considered subjective regarding what is selected and what is left out (McLellan, MacQueen, & Neidig, 2003). This is due to ongoing interpretations during transcription. This supports the need for reflexivity throughout the research process. Another consideration concerns the different aspects of speech used in the interviews, such as pronunciation, diction, accents, and grammar (Oliver et al., 2005; McLellan et al.,
2003). This requires careful attention so that the spoken words, in the order and manner of the speaker, are captured correctly.

**Voice recognition software.** Voice-recognition software was used for the transcriptions. The program selected for this task was Dragon Dictate by Nuance ([http://www.nuance.com/](http://www.nuance.com/)). The software is speaker-dependent and was trained to respond to this researcher’s voice. The audio recording was downloaded onto the computer and then played aloud through a set of headphones with an attached microphone. The software program then typed the words of both researcher and participant as their words were repeated into the microphone. Each interview was transcribed in this manner. This is what Matheson (2007) suggested in her step-by-step guide to using voice-recognition software for transcription purposes. She built her work upon that of Park and Zeanah (2005) who also focused their efforts on the advantages and disadvantages of using such software. After warming-up the software by speaking into the microphone for a short period of time, the actual interviews were then transcribed (Matheson, 2007). The surrounding environment was quiet, private, and distraction-free. Privacy supported the need for confidentiality in the research.

**Time Frame for Data Collection.** Data collection took place between January 2013 and April 2013. The interviews were conducted between January and March 2013. Every effort was made to accommodate time schedules of the participants, since the interviews were conducted during the school year when faculty members are most active. Syllabi were freely available, as were the undergraduate requirements and university catalog, either from the department website or the university website, respectively.
Data Analysis

Data analysis has many purposes, including describing, summarizing, interpreting, discovering patterns, generating themes, understanding individuals or groups, exploring, and discovering differences and similarities (Cohen, et al., 2011). The purpose and type of qualitative study dictates the type of analysis that will be performed. Thus, for this study of learning outcomes, codes, themes and patterns that relate to the use of the learning outcomes and the way in which they influenced teaching strategies, curricula, learning activities, student learning, and assessment were developed. Codes were derived from the interview transcripts and the documentation. The codes were then grouped with similar codes into categories. Themes were then derived from these categories of codes and played a vital role in interpreting the data and drawing conclusions. Since the analysis phase could have resulted in a large of amount of data, a plan was formulated for analyzing and interpreting the data.

Three steps were followed in the analysis phase of this study: preparing and organizing the data; reducing the data into themes through coding and condensing the codes; and representing the data using figures, tables, and the discussion (Creswell, 2013). The data was prepared, organized and stored on a password-protected computer. Codes were assigned to segments of information in the transcripts and other documents to capture the essence of the information. Themes were derived from the categories of related codes that built up to form a common idea. More information on coding is provided in the next section. For qualitative research, interpretation “involves abstracting out beyond the codes and themes to the larger meaning of the data” (Creswell, 2013, p. 187). Potentially rival explanations could also surface during the analysis of the data.
(Yin, 2009); this would provide a more thorough understanding of the issue and improve the quality of the research. No competing explanations were uncovered for this study.

**Coding.** The data was coded using *dedoose™*, an online software application for managing qualitative, quantitative, and mixed methods research data. The software is commercially available. The coding methodology for this study followed Saldana’s (2009) guide on coding. Two cycles of coding are suggested. The first cycle was used to assign codes to segments of the interview transcripts and documents, whereas the second cycle, which is more advanced, involved classifying, prioritizing, synthesizing, and integrating the information that was coded in the first cycle. The second cycle made sense of the first cycle codes by organizing the information into categories and themes.

For this study on learning outcomes, several simple and direct first cycle methods were used. The purpose of the study and the research questions guided their selection (Saldana, 2009). More than one coding method was employed because each method captured different aspects of the data. They complemented each other and provided a more holistic view of the information.

Attribute coding was used to record information such as time frame, gender, data format and any other variables of interest to the study (Saldana, 2009). Nearly all qualitative studies use this type of coding, especially when there are multiple participants and multiple forms of data. These codes were captured as descriptors in *dedoose™*. They included the source of the information, the gender of the participant, the assigned participant identification code, the number of years of experience in teaching the academic subject, and whether the participant taught lower level and/or upper level courses in the program. Structural codes were assigned to portions of information whose
content or expressed concepts related directly to the research questions. According to
Saldana, this type of coding is also useful for multiple participant studies and for studies
that use semi-structured techniques. This first cycle of coding also included descriptive
codes, which reduced data passages of interview transcripts and documentation to a word
or short phrase that captured what the information was about rather than what is meant.

In vivo codes were also assigned during the first cycle of coding. This type of
coding assigned a word or short phrase that represented the actual language of the
information (Saldana, 2009). These were captured as quotations. The last of the first
cycle methods was initial coding, which broke down qualitative data into “discrete parts,
closely examin[ed] them, and compar[ed] them for similarities and differences” (p. 81).
This type of coding brought to the surface other potential paths to explore.

The interview transcripts were manually coded first in order to have “more
control over and ownership of the work” (Saldana, 2009, p. 22). The codes were then
electronically assigned and collected in dedoose™. After the initial coding process, the
codes were re-examined through two more cycles of coding. This was especially useful
since reflection on the initial codes led to more refinement of the codes and because
coding is “rarely” correct the first time around (Saldana, 2009). Reviewing coding
multiple times is particularly useful for novice qualitative researchers. The codes were
then examined using various features found in dedoose™. Two of these features included
code cloud and code application. Code cloud allowed the examination of all excerpts
related to a particular code; the excerpts were easily compared to each other. Code
application displayed a table of how the codes were applied to each document and
transcript.
All codes used for this study were examined against a set of criteria to ensure their proper fit. First, the codes had to fit the study’s theoretical framework (Saldana, 2009). They also had to be associated with the research questions. Next, use of the codes had to be done with comfort and confidence. It was also important to use codes that provided the level of detail needed. In addition, the codes had to begin to collect around themes and patterns. Lastly, the codes had to generate new discoveries or insights.

All of the codes generated were then arranged into categories or “meta-codes” that group codes according to similarity. This took advantage of pattern coding, a second cycle coding method that groups codes in a way that suggests or infers particular meaning (Miles and Huberman, 1994, as cited in Saldana, 2009). The codes are “explanatory or inferential codes, ones that identify an emergent theme, configuration, or explanation” (Miles and Huberman, 1994, as cited in Saldana, 2009, p. 152). A smaller number of major themes for this study were generated from the meta-codes.

Validity and Reliability

Validity and reliability are concerns for qualitative research and a variety of terms are used to convey their meaning. Validity/dependability/authenticity refer to the stability of the results of the study, that they will not be susceptible to change and inconsistency (Cohen et al., 2011). The authors also define validity as the accurate representation of what the researcher intends to be described or explained. Honesty, depth, and objectivity play a role. Credibility refers to presenting a persuasive argument based on the weight of the evidence (Creswell, 2013). Alternate terms for reliability are “consistency” and “replicability” (over time/instrument/respondent) Cohen et al. (2011).
To address validity and reliability in this study on learning outcomes and their impact on teaching and learning, specific steps were taken. The study employed the proper use and accepted definitions for concepts and terms, thus addressing construct validity (Creswell, 2013). To address internal validity, data are presented in a transparent manner. Findings and interpretations come directly from the data and are able to be traced back to the data. The study addressed external validity by explaining any contexts from which generalizations could be made. The use of rich and thick descriptions, a salient feature of qualitative case study research, allows the reader to decide if the results will transfer to his or her situation. Concurrent validity was addressed through triangulation.

Researcher bias and assumptions tend to influence aspects of the study and, therefore, need to be known by the reader. To accomplish this, the bias is clarified up front along with any other assumptions that might affect the study (Creswell, 2013). Using reflexivity and conducting member checks of the data ensured accuracy of representation in the findings and interpretations addressed bias.

Face validity was important in the interviews, since the questions should “look” as if they measure what they claim to measure (Cohen et al., 2011). Although the participants did not have a copy of the questions, they were capable of determining the validity when asked the questions over the telephone or via Skype. Efforts were made to avoid leading questions and bias in the questioning.

Proper preparation helps improve the reliability of a research study, as does the meticulous presentation of details of the research process. Some important steps were taken to enhance reliability, which included knowing the issue well enough to participate
in the interview conversation fully, clarifying terminology, using active listening and allowing participants to take their time in responding to questions, and not straying off topic but being attentive to information that was important to the participant (Cohen et al., 2011). Reliability also rests on the ability of an interested party to follow the same procedures used in this study and obtaining the same results (Yin, 2009). Thus, creating a chronological record of events, as mentioned earlier, enhances reliability. Making the data accessible for review, for example, to dissertation committee members, also improves reliability. Coding samples were sent to the dissertation director for review. As many details as possible of how the research was conducted are provided. Using a good-quality digital recorder for the interviews and transcribing the interviews enhanced the reliability of the study (Creswell, 2013). This allowed the written text to be analyzed closely and thoroughly.

**Ethical Considerations**

There are some ethical issues that must be addressed when conducting qualitative research. The issues include informed consent and confidentiality (Cohen et al., 2011; Creswell, 2013). Participants were asked to sign an informed consent form before beginning the research. Confidentiality was guaranteed by disguising the participants’ campus, names and titles. No power asymmetry was detected during in the interviews; each interview was conducted as a two-way conversation that allowed the participant some level of control over the direction of the interview (Creswell, 2013). This collaborative structure is preferable (Kvale & Brinkman, 2009, as cited in Creswell, 2013).
Another ethical concern was storing the data collected from the interviews and documents. Along with organizing the data and making it available for review, the anonymity of the participants and the integrity of the information were protected using a password-protected computer (Creswell, 2013). Identification codes were used to shield the identities of the participants. The data was backed up to reduce any accidental loss of information.

The Institutional Review Board (IRB) at Benedictine University approved this research project on December 19, 2012 after support for the project was obtained from the IRB at the research site. An information letter was delivered electronically to each participant. The intent and scope of the research were explained. Further details about the research project were provided in the letter of informed consent, which was sent to participants prior to the scheduled interview. Before each interview began, participants were asked if they had any questions or concerns. The information letter and informed consent form are provided in Appendices C and D, respectively.

Limitations

While research offers the opportunity to accomplish much in the way of providing insights into new processes, it cannot account for every variable or situation that might be related to it. Limitations exist. For this study, a single institution was selected in order to study the impact of the use of learning outcomes developed through the Tuning process. Several institutions have undergone this process in the United States, which creates the possibility of a larger scale exploration. However, the goals of this study were to discover as much as possible about how the use of the “tuned” learning outcomes has affected teaching strategies/learning activities, curricula, assessment, and student learning, which
is best done through the case study approach. No generalizations can be made from this research.

Another limitation would be the small sample size utilized for the study. In order to obtain an in-depth portrait of the academic program under study, it was necessary to limit the participant pool to a number that could be reasonably interviewed for data collection purposes. While use of the semi-structured/open-ended interview format allowed for flexibility, the use of telephone interviews did not provide visual cues, which could have played a role in the interview process. Only one interview was conducted via Skype, which did allow for visual cues.

Although the anticipated amount of documentation restricted the number of participants, the actual amount collected was limited. Therefore, only syllabi and information from the department and institution websites were analyzed. All documents were obtained or transmitted electronically, thus minimizing cost.

**Summary**

This chapter described the use of a qualitative single-site case study approach for examining the impact of “tuned” learning outcomes on teaching and learning. Support was provided for utilizing qualitative research as a valuable means of exploring this process in depth. Support was also provided for the use of the single-site case study design, which facilitates the collection of rich data that provided codes and themes used for interpreting the findings and formulating conclusions. The mechanics of carrying out the research – participant selection and sampling, researcher role, and data collection – were discussed in relation to the purpose of the study. Data analysis consisted of generating codes, categories, and themes. A two-cycle coding strategy was emphasized.
Validity and reliability efforts were addressed. The chapter closes with a discussion of ethical concerns and limitations of the study.
CHAPTER 4: ANALYSIS AND RESULTS

This qualitative single-site case study was designed to determine the effects of the introduction of learning outcomes developed through the Tuning process on teaching and learning. Semi-structured interviews were conducted with five full-time professors at an institution that participated in the Tuning USA pilot project that was sponsored by The Lumina Foundation for Education (2009). Their experience in teaching in higher education ranged from five to almost thirty-five years. Tuning is part of The Bologna Process, which is a European initiative designed to ease student mobility by lowering the barriers that existed between the higher education systems in the various countries. The Lumina Foundation brought the Tuning process to the U.S. in 2009 by inviting three states to participate in developing learning outcomes that would indicate what students should be able to know and do in specific academic disciplines. Representatives at the institution in this study, a Tuning USA University (TUU), began utilizing the new discipline-specific learning outcomes in their academic program. This study chronicles the impact of this change. To collect information on the change, the following research questions were addressed:

How have the tuned learning outcomes impacted teaching and learning?

1. How have the tuned learning outcomes impacted the curricula?
2. How have the tuned learning outcomes impacted teaching/learning practices?
3. How have the tuned learning outcomes impacted assessment?
4. How have the tuned learning outcomes impacted learning?
In this section, data collection and analysis are detailed, and the findings of the study are presented.

**Data Collection**

Before beginning the study, a potential study site was investigated. In late summer 2011, I contacted the president and chief executive officer at the Lumina Foundation about my interest in pursuing research on the Tuning USA pilot project. He, in turn, forwarded my information to the program officer working on the pilot project. After speaking with the program officer via telephone, he agreed to introduce me, via email, to two professors at the potential research site. An initial discussion was held with the two professors, who agreed to participate in the study. After receiving the appropriate IRB approval on December 19, 2012, other participants were solicited via email for their participation in the study and an information letter was attached (see Appendix C), which indicated the nature of the study. Because of the lateness in the semester, the study would not begin until the following semester. Once the respondents agreed to participate, an informed consent form (Appendix D) was sent electronically and the interviews were scheduled at a mutually acceptable time. The actual order for data collection and analysis is shown in Figure 4.
**Interviews**

All of the participants were interviewed using a semi-structured format, which encouraged a two-way conversation and ample room for further probing and clarification. At the beginning of each interview, which was conducted via Skype or telephone, the participant was given the opportunity to ask questions concerning the research. Each interview was between one and two hours in length. Each interview was audio recorded for transcription and coding. The interview protocol appears in Appendix E. Because of the nature of conversations and the individual experiences of the participants, the interview did not always follow the prescribed order of the questions. If a topic entered the conversation earlier than the corresponding question on the protocol, it was addressed at the time it naturally entered the discussion. Each participant was assigned an
identification code to protect his or her identity. These codes were then used on all materials related to the research.

**Documentation and Media**

Documentation was also collected for this study. Using multiple sources of data addresses the construct validity test, which helps others determine that the “correct operational measures for the concepts [are] being studied” (Kidder & Judd, 1986, as cited in Yin, 2009). The documentation included course syllabi, the program undergraduate requirements, and the department page from the university course catalog. A video presentation was also analyzed for this study. Professors in the department discussed teaching innovations that were introduced after implementation of the new learning outcomes.

**Syllabi.** Syllabi were collected for courses that the participants taught after introduction of the outcomes; they were obtained directly from the academic department website or were submitted by the participant via email. The distribution of syllabi used in the study is shown in Table 1. Although all participants indicated that they taught both lower level and upper level courses, their teaching schedules varied; thus, it was not possible in all cases to obtain course syllabi at the lower and upper levels for each. The number of syllabi for the specific term appears in parentheses. Thus, a minimum of two syllabi were collected for each participant, with one participant having four course syllabi available. All but one of the syllabi come from 2012, the year immediately prior to this research study. This year was chosen so as to have the most recent information on the use of the outcomes in the courses.
Table 1

*Syllabi Distribution for Tuning Study*

<table>
<thead>
<tr>
<th>Participant Code</th>
<th>Course Term and Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Fall 2012 – lower level (1)</td>
</tr>
<tr>
<td></td>
<td>Fall 2012 – upper level (1)</td>
</tr>
<tr>
<td>P2</td>
<td>Spring 2012 – upper level (1)</td>
</tr>
<tr>
<td></td>
<td>Fall 2012 – upper level (1)</td>
</tr>
<tr>
<td>P3</td>
<td>Fall 2011 – upper level (1)</td>
</tr>
<tr>
<td></td>
<td>Spring 2012 – upper level (1)</td>
</tr>
<tr>
<td>P4</td>
<td>Spring 2012 – upper level (2)</td>
</tr>
<tr>
<td></td>
<td>Fall 2012 – lower level (1)</td>
</tr>
<tr>
<td></td>
<td>Fall 2012 – upper level (1)</td>
</tr>
<tr>
<td>P5</td>
<td>Fall 2012 – lower level (1)</td>
</tr>
<tr>
<td></td>
<td>Fall 2012 – upper level (1)</td>
</tr>
</tbody>
</table>

*Note:* Lower level = first-year and second-year courses. Upper level = third-year and fourth-year courses.

**Undergraduate requirements.** The undergraduate requirements for the program were also used as part of the documentation. These were obtained directly from the department website. The requirements were published on the site May 2012. In addition to listing admission requirements for the major, which includes the pre-major requirements, the undergraduate program learning outcomes are also listed and are divided into knowledge, thinking, and skills sections. These two areas of the requirements – admission requirements and outcomes – relate directly to the research and will be discussed further under the section on themes.
University general catalog. The academic department page in the university general catalog was also used as part of this study. An online search to locate the department page within the catalog revealed several years of archived catalogs. The archived catalog for the 2011-12 academic year contained the new learning outcomes and pre-major. The department page contains all of the information from the undergraduate requirements for the major along with additional information on graduate programs and a full list of program faculty.

Video presentation. Data was also collected from a video presentation in which several professors from the department program in the study spoke about their teaching innovations in the department since the introduction of the learning outcomes. The first viewing of the video determined its applicability to the study. Eight professors from the department were represented in live or pre-recorded segments that lasted approximately five minutes each. The department also teaches courses that are not part of the discipline that underwent tuning. Therefore, a segment pertaining to a course outside the discipline and a graduate course segment were not included for data collection. The video was viewed a second time to collect the pertinent data. Rather than download this rather large piece of media into dedoose™ for coding, coding was done in the following way: sections of the video pertaining directly to the learning outcomes were summarized with the time of their appearance in the video. For example, in the 83-minute long video, in the segment that began at 20 minutes 49 seconds, one professor discussed how use of the learning outcomes grading rubric shifted student office hour visits from the student wanting a grade changed to the student asking how he or she could improve in the deficient areas noted on the rubric. Once the summaries were completed in a Microsoft
Word file, the document was loaded into *dedoose*™. Codes were assigned to the segment summaries in a manner similar to the other documents and the interview transcripts.

**Coding**

Each interview transcript, document, and video summary was coded following first cycle and second cycle coding methods provided by Saldana (2009). Figure 5 shows the coding strategy used for this study.

*Figure 5. Coding Strategy.*

The first cycle coding methods were utilized on the interview transcripts after each interview. Syllabi were the most readily available type of documentation and were collected after the interviews had been completed. Further searching on the institution website, after all of the interviews and syllabi had been collected and coded, revealed the presence of the undergraduate requirements. In order to compare the department website information on requirements for the majors with the information the university presented,
the university catalog page pertaining to the program in this study was obtained for coding. The video recording used in the study was not discovered until after all of the other materials had been coded and analyzed. While most of the codes assigned to this presentation already existed in the list of codes used for the study thus far, three new codes were added for information that had not been previously presented.

**First cycle.** First cycle coding methods included attribute coding, descriptive coding, structural coding, in vivo coding, and initial coding. Attribute coding assigned information that described the source of the information. For example, gender, the number of years teaching in higher education, and course levels taught were assigned for the interview participants. Attribute codes also included “interview transcript”, “syllabus”, and “video”. Descriptive codes indicated what the information was about without attaching meaning to it. An example is “written materials,” which was used for the reading material that was indicated on the syllabi under student assignments. Structural codes were generated from information that directly answered the research questions. For example most of the participants stated that the effects on student learning due to the introduction of the outcomes was not yet known or would take time to be demonstrated. Thus, the code “slow progress demonstrating learning” was assigned. In vivo codes were verbatim representations of the data. One participant used “larger payoff over time” to describe the creation of assignments for students now that the “tuned” learning outcomes were in place. This in vivo code also served as a structural code since it directly answered the research question regarding changes in assignments due to the introduction of the learning outcomes. The last coding strategy used during the first cycle was initial coding, which broke down the data into a meaningful word or phrase.
Examples include “building skills”, “emphasizing outcomes”, and “professor teaches in own way.” These codes help to explain what is happening. Two more cycles of first-cycle coding helped to refine and reduce the codes. All of the codes, categories and themes are listed in the codebook in Appendix F.

**Second cycle.** Pattern coding was used as the second cycle coding strategy to condense the codes into coherent groupings that would aid theme generation. Nine categories were generated from the list of the 91 assigned codes. Between 80 and 100 codes can typically be generated from a qualitative research study in education, from which 15 to 20 categories are formed and five to seven major themes emerge (Lichtman, 2006, as cited in Saldana 2009). The categories for this research study include Variety in Teaching/Learning Strategies, Variety in Course Assessment Tools, Innovating the Curriculum, Focus on Student Skills, Benefits to Students, Open Communication of Outcomes, Purposeful Attention to Outcomes, Freedom in Teaching Practice, and Developing Areas.

**Themes**

The nine categories for this study led to six major themes, which are all presented in Table 2. The themes that emerged include Diverseness, Preparation and Improvement, Intentionality, Transparency, Autonomy, and Under Development.

**Transparency.** Transparency refers to open communication about and clear understanding of the outcomes. Several sources of information provided evidence for this theme. The undergraduate requirements and university course catalog clearly displayed the program learning outcomes for students and other interested parties. Each of the course syllabi analyzed for this study also displayed the learning outcomes. In many
cases, the professors translated the outcomes to fit the specific course they were

Table 2

*Categories and Themes from Tuning Study*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency</td>
<td>Open Communication of Outcomes</td>
</tr>
<tr>
<td>Autonomy</td>
<td>Freedom in Teaching Practice</td>
</tr>
<tr>
<td>Preparation and</td>
<td>Innovating the Curriculum</td>
</tr>
<tr>
<td>Improvement</td>
<td>Focus on Student Skills</td>
</tr>
<tr>
<td></td>
<td>Benefits to Students</td>
</tr>
<tr>
<td>Intentionality</td>
<td>Purposeful Attention to Outcomes</td>
</tr>
<tr>
<td>Diverseness</td>
<td>Variety in Teaching/Learning Strategies</td>
</tr>
<tr>
<td></td>
<td>Variety in Course Assessment Tools</td>
</tr>
<tr>
<td>Under Development</td>
<td>Developing Areas</td>
</tr>
</tbody>
</table>

teaching. Course outcomes were also linked to the department outcomes on some of the
syllabi. One participant used “a table [to] identify the [] department’s learning outcomes
and what exactly in this class [] we will be doing that [is] considered part to that
outcome.” Participants explained the outcomes to the students and clarified the purpose
of the assignments as they related to the outcomes. Most of the professors, who were not
part of the team that developed the learning outcomes, were introduced to them at
department meetings or through presentations. Faculty spoke individually to one another
about them as well.

**Autonomy.** Autonomy refers to how independent a professor is in his or her
teaching practice. From the study results, the instructors were free to change or modify
their assignments as desired. They could experiment and innovate. One participant mentioned how, during department meetings, professors in the department would think of ways that their courses were contributing to the outcomes and also mentioned possibly new ways the department could help students achieve the outcomes. The use of the outcomes was completely voluntary. One participant mentioned that there was no coercion used in inviting the professors to use the new set of outcomes. However, the one request that was made was to use one learning outcomes grading rubric in the senior capstone course. Professors continued to have the freedom to teach in their own way. At least one participant did not make modifications to the teaching strategy in order to utilize the outcomes. The professor stated, “[the learning outcomes] were building on something I was already doing in my classes.”

Preparation and Improvement. The preparation and improvement theme was generated, in part, from a collection of codes that addressed the curriculum changes that were made in order to better prepare students for the program major. Codes that related to the alignment of the curriculum included: created pre-major, start with the end and plan backwards, course contribution to achieving the outcomes, and “progressively expand skills and competencies”. The last code represents an in vivo code from one participant who was speaking about the way the curriculum was now viewed in light of the new outcomes. Another participant said, “the key shift we’ve done was to introduce a pre-major to the student…You just can’t go into these upper-level courses thinking, yeah, I’ve got what it takes to succeed…” Student preparedness was also challenged by a participant who stated, “we’ve got to start from the bottom”, regarding the scarcity of applicable skills for managing and mastering coursework. In order to help students gain
the skills needed, another participant, speaking about the course taught, chose to “vary the skill building exercises [so that they matched] overall objectives”. The outcomes provided a vocabulary for students to be able to express what they could do; “they need the vocabulary of the outcomes to describe their own experience”, according to one study participant. Professors also mentioned that students in their courses were poorly prepared, lacking the necessary skills to do well.

There were several benefits that were noted by participants in the study. The implementation of the “tuned” learning outcomes and the emphasis placed on them by publicly displaying them, placing them on the course syllabi, and discussing them in the classes created greater transparency for the students. There were able to identify the expectations for courses and the program. This clarity extended to the expectations for practitioners in the field. The outcomes provided students with a common language for understanding the expectations. They could identify the skills that there were gaining in their courses. Professors clarified assignments so that there was a clear link to the outcomes. One professor noted that the learning outcomes were informational and provided structure for the students. Some classes became more interactive, allowing students more participation. Feedback sessions with students were more productive or reached the productive stage much sooner because of the learning outcomes grading rubric used by some professors. Anecdotal information indicated that students already subjected to the pre-major had benefitted from it in their learning. One participant told students in a course “one of the first things I want you to talk about with [an] employer is how [this program] taught you collaborative team skills.”
**Intentionality.** This theme was derived from a collection of codes that concerned the attention and actions of the professors in the classroom as they related to the new learning outcomes. Professors demonstrated a heightened awareness of the outcomes in conducting their classes. In at least one case, the professor accommodated more time for student interaction. Professors addressed all of the new outcomes to some degree and emphasized to a greater degree those that were more pertinent to the course. Professors thought of new ways of thinking about their courses. They experimented with new assignments, sometimes modifying current ones or creating new ones that would have a “larger payoff over time.” For example, this professor was rethinking the types of books he assigns students to read. He also added a “twist” to one of the courses by having students describe their research projects in terms of the skills they were utilizing. After students struggled with the exercise, the professor helped them identify their skills and learn the vocabulary to describe those skills. Previously utilized assignments were being brought back into the classroom. More focus was given to the student learning perspective. One professor mentioned creating assignments that would have a real-world connection. One professor remarked that the “mutual understanding of why we’re doing [what we are doing] and what the point is” was the difference in the classroom. Professors carried this keen awareness of the outcomes with them as they taught their classes. The outcomes served as a guide for what they were doing.

**Diverseness.** The majority of the information that was grouped into the two categories for this theme was taken from the course syllabi. Listed on each syllabus was information that pertained to how the course was conducted by the instructor, the assignments used to effect learning, and the methods used to measure learning.
Instructors used lectures, written materials, discussions, library visits, research and reports, written assignments, and workshops as strategies for teaching/learning. Feedback sessions with students were also included among these approaches as were the interactions professors had with their students during their office hours. Thus, the teaching strategy was not limited to classroom interactions. For the senior capstone courses, students worked more independently, conducting research for their senior theses. Learning assignments in those courses also included a variety of strategies that were designed to effect student learning. They included reading assignments, visits to the library, writing assignments, and participating in discussions and workshops. The types of assessments varied and depended on what type of information the instructor was targeting for learning or assessment. Professors measured student learning using quizzes, essay exams, objective exams, research papers, peer review, and tests. The learning outcomes rubric was used to assess the senior capstone thesis and other written work for some of the professors in the study.

**Under Development.** Under development refers to the fact that there were some areas that have not come into complete fruition at the time of this research study. These included the demonstration of student learning and assessment of student learning. The pre-major was introduced two years ago and not enough students have gone through it to give enough evidence that the students are better prepared. There was anecdotal information, however, that indicated that this was true. So, the area is still emerging. In terms of assessment, a learning outcomes grading rubric has been used by several professors in their courses and by all professors who teach the senior capstone course. However, other avenues for assessing the learning outcomes are under investigation. One
of these is the learning management system that the institution utilizes. More time will be needed to determine the full effect of the learning outcomes.

Summary

The data for this study consisted of interviews, documentation, and a video presentation. The interviews were transcribed and coded using five first-cycle coding strategies. These strategies included attribute, descriptive, structural, in vivo and initial coding. Transcripts were coded a total of three times to refine and reduce the codes. Syllabi, the program undergraduate requirements, and the program page in the university general catalog were also coded. A total of 91 codes were produced, which were grouped into nine categories using pattern coding, a second cycle coding strategy. Six themes were then derived from the data and consisted of diverseness, preparation and improvement, intentionality, transparency, autonomy, and under development. A more detailed discussion of these themes as they relate to the “tuned” learning outcomes and research questions is provided in Chapter 5. Conclusions and recommendations are also included.
CHAPTER 5: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

The main goal of this research study was to determine the impact of the introduction of learning outcomes on teaching and learning. This chapter presents a summary of this study and an interpretation of the major findings that were presented in Chapter 4. The limitations and implications of the study are also presented along with recommendations for future research and concluding remarks.

Discussion

U.S. higher education has come under great scrutiny due to its decline in ranking as the highest producer of college graduates among the developed countries (SHEEO, 2005). In addition, a 2006 report from the U.S. Department of Education (USDOE) called into question many factors that it identified as lacking in U.S. higher education. Among them were accountability and transparency. Employers were also dissatisfied with the knowledge and skill set of recently hired graduates (Leveille, 2006). One of the suggestions made by the USDOE (2006) was to create a comparable measure of student learning, which could help address the quality issue and address the lack of accountability and transparency. The need for this was based on evidence that of the jobs that will be created anew, 90 percent of them will require the worker to have a higher set of knowledge and skills. Workers will need either postsecondary training or at least a college degree. With college students currently taking up to six years to graduate, they will not keep pace with the demand for educated workers (Kalina, 2012). The USDOE (2006) recommended the use of instruments to measure student learning, which included
comparing graduation rates, time to degree, and test scores. However, these do not represent authentic assessment, which utilizes assignments and projects that faculty, programs, and institutions develop to indicate how well a student has mastered a subject (Ewell, 2009; Geary Schneider, 2007). Even the Voluntary System of Accountability (VSA) offers several standardized exams that do not reflect direct learning (Kelly & Adelman, 2010). The USDOE report (2006) suggested changes in pedagogies, curricula, and technologies as ways to improve student learning. Thus, what is needed is a way to measure authentic student learning that might also include some of these changes.

A potential solution to this problem is to use learning outcomes, specifically those developed through the Tuning process. Tuning is a faculty-led process that leads to the development of a set of core competencies and learning outcomes for a specific academic discipline (What is Tuning, n.d.). The discipline-level focus allows departments to develop assessment measures based on what students learn in their programs. Tuning, part of the Bologna Process, was introduced to the United States through several publications (Adelman, 2008a, 2008b, 2008c). In 2009, the Lumina Foundation for Education initiated the Tuning USA pilot project as a way to ensure the quality of postsecondary degrees and to address the pressure to produce more educated individuals within the U.S. Lumina selected three states to participate – Indiana, Minnesota, and Utah. Each state selected two or three academic disciplines for the project. The teams consisted of and were led by faculty representatives from each of the state’s two-year and four-year institutions. Students were also represented on the teams. Biology, chemistry, education, history, physics, and graphic design made up the disciplines that underwent tuning. In order to examine the impact of the “tuned” learning outcomes on teaching and
learning, one academic program at one of the pilot project institutions was selected for this study. To determine the impact, the following research question and sub-questions guided the study:

How has the use of the tuned learning outcomes impacted teaching and learning?

1. How have the tuned learning outcomes impacted the curricula?
2. How have the tuned learning outcomes impacted teaching/learning practices?
3. How have the tuned learning outcomes impacted assessment?
4. How have the tuned learning outcomes impacted learning?

This study is significant to U.S. higher education because more and more institutions are now using the Tuning process (Kalina, 2012; Three-state project, 2012) and it has met with positive reviews thus far. Since Tuning develops a common and understandable language for the outcomes, stakeholders are better able to compare institutions. Policy makers would be able to obtain concrete data on student learning; and employers would have a clearer idea of how well graduates had acquired the knowledge and skills necessary for employment.

The theoretical framework selected for this study was constructive alignment, which was developed to ensure that assessments and teaching/learning strategies were arranged so that they supported the achievement and measurement of the intended learning outcomes (Biggs & Tang, 2011). According to the theory, the intended learning outcomes guide the selection of appropriate assessments. After adopting appropriate assessments, instructors select teaching/learning strategies that support the use of those
assessments. The entire process represents a feedback loop that continues to provide information that can be used for improvement.

The methodology selected for this study was a qualitative single-site case study. The research design is shown in Figure 6. Since Tuning is a new process in the U.S., a qualitative study would provide more in-depth information on the implementation of the learning outcomes (Cohen, Manion, & Morrison, 2011; Creswell, 2013); and rich and thick descriptions are obtained from those directly involved in the use of the learning outcomes (Tracy, 2010). Case studies are particularly useful for exploring real-life issues (Cohen et al., 2011) and provide answers to questions seeking an understanding of the issue that cannot be easily obtained otherwise (Cohen et al., 2011). Operational links can also be uncovered (Yin, 2009).

![Figure 6. Research design.](image)

The data collected for this study was derived from interviews, documentation, and a video presentation. Interviews provided a first-hand account of teaching and learning
experiences, while the documentation and video provided supporting information. This triangulation of data strengthens and provides validity for the study (Cohen et al., 2011; Yin, 2009). Participants included five full-time professors. The program officer involved with the Tuning USA pilot project suggested two of them; the other three were invited via email to participate in the study. A semi-structured interview format was selected to allow more freedom and control for the participant during the interview (Hesse-Biber & Leavy, 2011). The interview transcripts were transcribed using Dragon Dictate voice-recognition software (http://www.nuance.com/) before they were coded in dedoose™, a commercial Web-based software application for managing qualitative, quantitative, and mixed methods research data. Course syllabi, undergraduate requirements obtained from the department website, the department program’s page in the university online general catalog, and summary segments from the video were also coded in dedoose™. Five first-cycle coding strategies were utilized (attribute coding, descriptive coding, initial coding, in vivo coding, and structural coding) (Saldana, 2009). The interview transcripts were subjected to three cycles of first-cycle coding to reduce and refine the codes. Other documents were coded once. A total of 91 codes were generated (see codebook in Appendix F). Pattern coding was used as a second-cycle coding strategy to generate nine categories. From these categories, six themes emerged. The coding strategy and theme development is represented in Figure 7.
These themes consisted of Transparency, Autonomy, Preparation and Improvement, Intentionality, Diverseness, and Under Development. Transparency refers to the open communication of the new learning outcomes. They were displayed within the undergraduate course requirements, in the university general catalog, on course syllabi, and discussed and explained in courses the participants taught. Autonomy refers to the freedom that the participants retained in conducting their classes, their willingness to experiment and innovate because of the learning outcomes, and the voluntary nature of participation in utilizing the learning outcomes. Preparation and Improvement primarily focuses on the development of a pre-major and the actions and thoughts surrounding its development. This theme also included the focus on student skill attainment and the benefits that students reportedly obtain as a result of the implementation and use of the learning outcomes. The Intentionality theme represents the way in which participants
direct their energies toward use of the outcomes. They possessed a positive attitude toward them and took actions, such as creating or modifying assignments, to ensure their successful implementation. Diverseness represents the variety of teaching/learning strategies and assessments used by the participants in their courses. Most of the information was obtained from course syllabi. Strategies included lectures, discussions, research, and written assignments. The existing senior capstone course (and required research thesis) served as the assessment for the program, while quizzes, tests, essay exams, and peer reviews, for example, applied to other courses. A representation of the themes, emphasizing their connectedness, is shown in Figure 8.

![Diagram](image.png)

*Figure 8. Connectivity of emerging themes.*

**Theme 1: Transparency**

This theme represents the way in which the new learning outcomes were communicated to faculty, students, the institution, and the public. Transparency has been
tied to accountability and has been a major focus for improving the quality of student learning (USDOE, 2006). The public display of the new learning outcomes in this research study seems to be a step in this direction. The incorporation and implementation of these outcomes signal a change, and potentially, an improvement in the way students will be educated.

Whenever a new initiative is undertaken, it is important to communicate it in more than one format. This is a key factor in successful implementation of any change effort (Shweiger & Denisi, 1991; Lewis & Seibold, 1998, as cited in Allen, Jimmieson, Borida, & Irmer, 2007). Although there are a variety of methods for communicating, there are several that are preferable for the success of the effort. They include face-to-face conversations, speaking one-on-one, and using different media (Klein, 1994). Face-to-face discussions allow for direct questioning and thus, the opportunity to gain a better understanding of the topic (Clampitt & Berk, 1996). For this research study, the participants and department utilized several avenues for informing students, faculty, the institution, and the public about the new learning outcomes. Thus, they have reached out to all stakeholders and seem to have connected with them through the new publicly displayed learning outcomes. This could lead to conversations that now share a common language of understanding, as mentioned by one of the participants in the study; however, this understanding is now extended beyond the classroom setting. Another participant mentioned that other programs at the institution were now starting to discuss Tuning efforts of their own. This could lead to more changes within the institution and its programs.
The first part of creating a constructively aligned program is to start with the intended learning outcomes (Biggs & Tang, 2011). Thus, having them open to the public, on the course syllabi, and in other locations sets up the beginning of the creation of a coherent program. Students and professors have the potential to share the same understanding of the outcomes since explanations are offered in addition to the display of the outcomes. Professors are making concerted efforts to inform their students about the outcomes and their meaning for their courses and coursework. This awareness creates the opportunity for the professor to directly address the outcomes in his or her teaching strategies and in the learning assignments developed to help students meet the outcomes. Students have the potential to gain a deeper understanding of the expectations because of the explanations and discussions about the outcomes with their professors. They will know what they are expected to be able to do in their courses and program. As one professor noted, a major difference in communicating with students about the outcomes is the “mutual understanding of why we’re doing it and what the point is.”

This transparency of the learning outcomes “justif[ies] the curriculum’s design” (AACU, 2002). By displaying the learning outcomes, the program appears to be inviting scrutiny to ensure that it is indeed meeting its obligation to address the outcomes; this leads the way toward the creation of an accountability mechanism, in line with the recommendation from the USDOE (2006). Appropriate assessments will be an expected part of this accountability. Sharing the results of assessments of learning outcomes is important for institutions (Ewell, 2008). Some accreditors have required departments and institutions to not only have a clear statement of learning outcomes, but to also use multiple measures of learning (Middaugh, 2007). More on the measures of learning will
be discussed under Diverseness. Thus, by providing the learning outcomes and explaining them to their students, the program and professors have taken a step toward providing evidence of student learning. The following themes elaborate on the progress they have made.

**Theme 2: Autonomy**

The autonomy theme describes how the professors continue to be free to teach in their own way. Professors have traditionally been granted a high degree of autonomy and academic freedom in the classroom and in conducting research, although accountability pressures have had some impact (Altbach, Berdahl, & Gumport, 2005; American Association of University Professors, n.d.). Since the classroom is the domain of the professor, the professor bears the responsibility for ensuring that the learning outcomes are addressed and met. The transparency of the outcomes, as discussed above, leads the way for professors to begin their courses with them, matching the premise for constructive alignment. The professors are free to utilize approaches they consider suitable for helping the students learn and achieve the intended outcomes. They craft suitable syllabi, select applicable assignments, and develop appropriate assessments. It was noted in the study that professors voluntarily utilized the new learning outcomes. However, all of the professors were asked to use a single learning outcomes grading rubric for the senior capstone course.

The choices professors make in the classroom could have an impact on student learning. Professors are free to experiment and innovate and thus, could create assignments that have a great impact on the knowledge, skills, and competencies of the students. Professors also maintained the ability to choose suitable assessments for their
courses. One participant pointed out that the outcomes fit in with what professors were already doing or thinking; therefore, while some changes were made to address the outcomes, not all of the professors in the study indicated a desire or necessity for making changes. One significant change thus far in the program was the creation of the pre-major. This reflects the ability of professors to examine the current curriculum in light of the new learning outcomes and capitalize on the opportunity to innovate. Whether considering individual courses or the curriculum as a whole, the professors, because of their autonomy, can assess how each of their courses should be taught based on the student make-up and their knowledge of student learning and learning styles. However, similar to the limitation with transparency, possessing autonomy in teaching does not necessarily translate into action in the classroom. There must be demonstrable efforts to use the outcomes as a means of helping students achieve the outcomes. The Intentionality and Preparation and Improvement themes build upon this autonomy and show how the professors have used the new learning outcomes to guide their actions.

**Theme 3: Preparation and Improvement**

This theme is composed of a curricular shift, the focus on student skills and the benefits that students gain as a result of the implementation of the learning outcomes. It reflects the changes that were made in an effort to better prepare students for the major and improve their learning. The most dramatic change that occurred as a result of implementing the new learning outcomes was the creation of a pre-major for the program. This change was directly attributed to the use of the new learning outcomes. They led the professors to rethink how students were prepared for their courses and the major. Constructive alignment requires such a change when misalignment is discovered.
(Biggs & Tang, 2011). The interviews and video presentation provided unequivocal evidence of this misalignment and the solution to the problem. The university catalogs prior to the one accessed for this study did not list a pre-major requirement for the program. Professors in the study stated that the shift was implemented because students were not well prepared for future courses in the major. The purpose was to enable students to acquire a certain set of skills and knowledge that would increase as they progressed through the program. By working backwards from the existing capstone course, the department determined where students should acquire certain knowledge and skills. The pre-major was then constructed of courses that not only met the major requirements but also the general education requirements of the university. The large list of options that were previously available was narrowed to courses that provided the most benefit to students in the major. Along with a transparent set of outcomes, creating a well-defined curriculum leads to “graduating intentional learners” (AACU, 2002, p. 30).

This type of working backwards that the professors in the program displayed is a trait of highly effective teaching (Bain, 2004). In the capstone course, the students work independently and the professor takes on the facilitator role. Thus, it is reasonable to expect students to be able to master such a challenge as long as they are properly prepared for it.

The program has taken steps that fit with good practices for creating a curriculum for the major. It started with the intended outcomes that were made known to the students and faculty; these served as guides for the program (AACU, 2004). The beginning courses in the program introduce students to scholars in the field and “provide[] insight into the ways scholars in that field think and create knowledge” (p. 8). One of the syllabi
in the study states that the course will help students “acquire [discipline] knowledge, []
think like a [scholar in the field], and [] develop specific [disciplinary] skills.” In doing
so, the professor indicates that students will be exposed to readings and learn to analyze
those readings. Beginning with this type of introduction then sets the tone for further
development as the student progresses through the program. Subsequently higher-level
courses should then form a structured sequence (AACU, 2004). Programs such as the
sciences typically have a structured curriculum; however, humanities programs are not as
well structured. Thus, the program in this study has now structured the curriculum to
provide a sequence that helps students “build on prior learning” (p. 8). The AACU also
recommends a final program experience where students integrate what they have learned
throughout the program. This can take the form of a research project, policy paper or any
other form that provides such an experience. The program in this study already had a
senior capstone course in place, and used this as the end point from which the new
curriculum was built. In looking at the skills needed for this course, the program
determined where in the program students would need to gain specific skills, and
consequently, the pre-major was created. The senior capstone project also serves as an
assessment for the program. More on assessment will be described under Diverseness. By
designing a pre-major that consisted of not only major courses the student would need,
but also the best-suited general education courses, the program has integrated the two as
recommended by the AACU (2004). This creates more coherence in the program and for
the students.

Some of the preparative attention has been on improving student skills, including
providing them with the vocabulary to describe those skills. Before students can even
describe them, however, they must be able to identify them. One professor described helping students "connect the dots" when they were asked to describe what they were learning in the class as if they were presenting that information to an outside audience. The students struggled and failed to go beyond the details of their individual projects. The re-alignment of the curriculum, with an emphasis on the particular skills students would need for this course, should minimize this type of struggle. If the program is successful in providing the skills and the vocabulary to describe them from the beginning of the program, the possibility exists for students to successfully inform any audience about their abilities.

Students have thus far gained benefits because of the introduction of the new learning outcomes. In addition to the clarity they now have on what is expected of them in the major and as a practitioner in the field, they receive better preparation for their future courses. This could result in producing graduates who are more capable of not only describing what they can do, but also actually demonstrating those abilities to future employers. According to professors in the study, student reactions to the new learning outcomes have been mixed. Some responses have been positive; some have been indifferent. Others have been in between the two. However, several professors reported that student feedback sessions have been more productive because of the learning outcomes grading rubric. They discuss what the student needs to do to improve; this is in contrast to previous sessions that focused on disagreements over receiving a specific grade. These more productive discussions could signal an emphasis on the student’s responsibility in his or her own learning. Constructive alignment requires students to take a more active role in their own learning (Biggs & Tang, 2011).
One professor noted that courses could be taught how they were envisioned because students coming into those courses after experiencing the pre-major are better prepared. Another way teaching could be affected is by ensuring that students obtain the necessary foundational skills they need in their lower level courses. As will be discussed more thoroughly under Intentionality, professors can direct more energy toward ensuring that students gain these beginning skills along with the knowledge they acquire. Professors who might have had to address these foundational skills in upper level courses may now be able to tailor their assignments and assessments more appropriately.

**Theme 4: Intentionality**

The theory of constructive alignment deliberately addresses teaching in order to “increase the likelihood of most students achieving th[e] [intended learning] outcomes” (Biggs & Tang, 2011, p. 11). Teaching/learning strategies are linked in a systematic way. In this study, the creation of the pre-major was the main result of the implementation of the new learning outcomes. Thus, the professors can now demonstrate their intention to address these outcomes by directing purposeful attention to them in the classroom. Their demonstrative efforts, composed of their mindset and actions, will be discussed under this theme.

Not all of the professors in the study believed it was necessary to make changes to assignments in their courses. However, some did choose the opportunity to design new assignments, change existing assignments, or re-craft previously utilized assignments. Course content dictated which outcomes were utilized and to what level or depth they were addressed. One professor noted that assignments were being created to provide a “larger payoff over time.” The assignments would have a long-term effect rather than a
short-term effect. Students would acquire abilities and knowledge that would go deeper. All of these changes were made due to a heightened awareness of the learning outcomes. Even when no changes were made to course assignments after introduction of the intended learning outcomes, this sense of awareness was still reported. As long as the assignments and assessments appropriately address the intended learning outcomes, constructive alignment requirements are being met (Biggs & Tang, 2011).

The way in which a professor conducts a class can have an impact on student learning. Instead of professors asking themselves what students should learn, the question focuses on what students should be able to do (the intended learning outcomes) (Bain, 2004). Thus, the learning outcomes help guide the direction of the class. Part of this effectiveness includes helping students learn to read in the discipline, as was briefly mentioned earlier. Reading in one discipline can vary from reading in another. Thus, helping students learn to read in their own discipline could improve their learning experiences. In addition, the way a professor structures the course can “encourage[] students to learn how to learn and to benefit from their own mistakes” (p. 57). Course syllabi reflect how professors set up their courses. In addition to displaying the intended learning outcomes, the syllabi contain the assignments and the sequence for knowledge and skill acquisition. The syllabi examined in this study do display the ways in which professors addressed the learning outcomes. However, professors can recycle their syllabi, so it is not known whether courses taught by professors in this study were set up differently because of the new learning outcomes. What is clear is that the professors have expressed their intent to address the outcomes and are making concerted efforts to do so through the types of assignments and assessments displayed on their syllabi. As
mentioned previously, professors are free to experiment in their courses. The new outcomes may have provided them with an additional opportunity to think about their courses in new ways. Their actions and their thoughts appear to be directed toward helping students fulfill the curricular requirements. Despite the efforts of the professors and the new curriculum that was designed, all students might not achieve the desired learning outcomes and level of learning. Context, learning styles, course difficulty, and other factors could play a role as well as personal characteristics (Lattuca & Stark, 2009).

The intentional actions of the professors could also engage students more readily in their own learning. One professor remarked how students were being brought into discussions more during the class. Course material that would have previously been addressed through lectures was now being made available online for students to read on their own. This type of active learning could help students improve their learning because they are able to process their thoughts and reflect on the thoughts of others (University of Minnesota, 2008). More on active learning is discussed within the context of the next theme.

**Theme 5: Diverseness**

This theme resulted from the variety of teaching/learning strategies and assessments used by the professors interviewed in this study. These represent the ways in which they chose to help their students achieve the intended learning outcomes. The majority of the professors in the study have been teaching for more than 15 years, with several of them having more than 25 years’ experience; thus, they are experienced at creating syllabi that address course content and developing assessments to measure student learning. Even though the types of strategies and assessments used in their
courses are not unique to the learning outcomes, there were changes that were directly attributable to the implementation of the learning outcomes.

The majority of the data for this theme was extracted from the course syllabi. Each syllabus contained most of the elements of the academic plan as defined by Lattuca and Stark (2009). Each one included the strategies used for teaching/learning, the materials and resources, the sequence for obtaining knowledge and skills, students the course served, and how the students were to be assessed. All of the syllabi included a section addressing the intended learning outcomes for the course and, in some cases, a link to or mention of the department outcomes. Professors modified the learning outcomes to fit the course content. Thus, not all department outcomes are addressed to the same degree because of the variable level of skills and competencies assigned to each course. Some of the syllabi also included a grading rubric, which can have a direct effect on the type of feedback students receive. Feedback sessions with professors were already noted as being more productive because of the specificity of the learning outcomes grading rubric.

According to the syllabi and interviews with the participants, students were engaged in discussions, group work, and collaborative activities. These are the types of activities that create a quality baccalaureate program (AACU, 2004). The variety of strategies allows students to work at their own potential (AACU, 2002). Individual and collaborative activities help students develop negotiation, conflict resolution, teamwork, small group, interpersonal, and collaboration skills (AACU, 2002; The Ohio State University, 2012). Students can also gain a sense of personal responsibility and individual accountability through collaborative activities (The Ohio State University, 2012).
Discussions help students learn to verbalize their learning and enable professors to determine how well they are learning. They can also foster critical thinking.

While lectures can put students in the position of a passive learner, lectures do enable students to see potential role models in action (The Ohio State University, 2012). Lectures also stress the importance of developing listening skills. One limitation on the use of lectures is that they “assume that all students are learning at the same pace and at the same level of understanding” (p. 82). Therefore, lectures are best used in combination with other methods to take into account the diversity of learning approaches.

The course syllabi in the study also included writing assignments in the form of essays, short papers, and research papers. These help students express their ideas and also create them (The Ohio State University, 2012). Students have the opportunity to expand their knowledge and thinking. Taken together, the variety of assignments used by the professors in this study seems to indicate a way of “teaching for powerful learning” by targeting the different learning styles and ways students learn (AACU, 2002, p.32). Utilizing assignments that require reading, writing, speaking, listening, and reflecting promote active learning (University of Minnesota, 2008), which helps students better retain information (Smith & Cardaciotto, 2011). Requiring students to think more thoroughly promotes deeper processing of information, which is an effective teaching strategy (Bain, 2004). The diversity of teaching/learning strategies also appears to target different learning gaps that might exist (Light et al., 2009). Motivation plays a significant role in overcoming these gaps. Thus, creating and integrating meaning in the social context of learning is important. Developing a learning environment that contains support (from the instructor), interpersonal interactions (among students), and independent
experiences can be key. It was clear from the interviews that the participants tried to design experiences that were meaningful to their students. The discussion under Intentionality supports this.

Assessments also play an important role in learning. The theory of constructive alignment suggests that this area be addressed first regarding the use of the intended learning outcomes (Biggs & Tang, 2011). Before instructors choose teaching/learning strategies for the course, they need to decide how learning will be assessed. When assessments are aligned with the outcomes, they encourage students to learn what they need to learn.

Except for the senior capstone course, professors administer different types of exams to determine how well students have mastered course material and skill attainment. They include essays, short papers, research papers, objective exams, quizzes, and peer review. As mentioned earlier under Autonomy, the professor determines what each exam covers and how it will address the learning outcomes for the course. According to constructive alignment theory, multiple-choice questions used on exams could assess high-level problem-solving learning outcomes or they could focus on low order learning outcomes (Biggs & Tang, 2011). For the latter, students are asked to memorize, recall, identify, and match information. These types of assessments focus on declarative knowledge, which is “public knowledge, subject to rules of evidence that make it verifiable, replicable and logically consistent” (pp. 81-82). Written exams such as essays force students to explain, argue and analyze information, which demand a higher level of intellectual processing. This type of assessment measures functional knowledge, which “informs action, where the performance is underpinned by understanding” (p. 82).
Biggs and Tang profess a preference for the latter type of assessment for intended learning outcomes, in addition to having clear criteria and a grading rubric. They also make the point that assessment tasks need to be manageable for the students and the professors. Thus, the choice is left up to the professors who must administer them in their courses.

Since the professors have indicated that they are directing their energies toward addressing the outcomes in their courses, one can surmise that the present collection of assessments are appropriate for measuring how well students are achieving the intended learning outcomes. This, however, could change as time goes on. However, like one professor noted during an interview, the professors in this program were already addressing these outcomes before they had the formal language that was developed through the Tuning process. Therefore, the content of the courses, including the assessments, might not undergo a significant change. However, the willingness of professors to experiment in their courses could lead to some changes. This area is still evolving, as will be further explained in the discussion of the last theme, Under Development.

The senior capstone course in the program serves as a final culminating experience and assesses the attainment of the intended learning outcomes. This requires the program to ensure that students are progressively obtaining the necessary knowledge and skills throughout the program (AACU, 2004). The capstone course is considered a high-impact practice, one that helps students assimilate and apply their learning from their past years in the program (Kuh, 2008) and demonstrate their competence (Kuh, 2012). A single learning outcomes grading rubric is used for all of the senior capstone
classes, which provides a consistent set of expectations for the students. As mentioned previously, it was from this point that the program worked backwards to determine what knowledge and skills students needed to obtain and where that set of knowledge and skills needed to occur. This led to the re-alignment of the curriculum. Because of this re-alignment, students are expected to be better prepared for the capstone and perform better on their research projects. However, each individual student is different and each course in the program would need to address the necessary outcomes, whether the formal language is used or not, in order to help bring about the best results.

**Theme 6: Under Development**

Although the professors are currently utilizing various assessments in their courses, the types of assessments could change over time as the new intended learning outcomes continue to be utilized in the program. More than one professor indicated that this area is still evolving. Professors might also discover that the assessments they are using fit well for some of the learning outcomes, but not others. The program is exploring the possibility of using the institution’s learning management system as a way to conduct assessment. The differences expressed in the desire to make changes in courses indicate that there is no one right way to approach assignments or assessment of the intended learning outcomes. The existing senior capstone course appears to be a good opportunity for professors to determine how well students have mastered the intended learning outcomes in the program. The courses leading up to the capstone, then, also serve a supporting role. As mentioned previously, enabling students to integrate their learning and apply it is an appropriate means of determining whether they have achieved the intended outcomes for a program (AACU, 2004).
When asked at what point they will know that the students have obtained the learning outcomes, the participants’ responses were of an uncertain nature. This indicates the need to examine this area further so that the effectiveness of the outcomes and the way in which they are addressing them in their courses can be properly evaluated and improved upon if necessary. One professor did mention designing a semester-long assignment that could indicate how well the students achieve the outcomes. The results may play a more significant role with continued use of the learning outcomes.

Since the “tuned” learning outcomes have been in place for only a few years, there has not been enough time to truly demonstrate the impact on student learning. This is an area that will also continue to evolve over time. Although some professors mentioned that students are coming into courses better prepared because of the implementation of the pre-major, more research will need to be done in order to track student progress. Thus far, the senior capstone course (assessment) serves as the indicator for how well the program is preparing students and how well students are meeting the desired learning outcomes. One limitation could be the extent to which the “tuned” learning outcomes are being addressed in the courses, regardless of the formal language developed through Tuning. Although all professors were said to be addressing the outcomes, the possibility that they are not could affect results. The formal language of the outcomes could prove useful and help students communicate and gain a better understanding of what they are expected to be able to do. This could help them in their future courses and with their endeavors beyond college.
Summary

This research study has demonstrated that the implementation of the learning outcomes developed through the Tuning process has led to better alignment of the program curriculum, which is not unexpected in the constructive alignment framework (Biggs & Tang, 2011). Professors in the study are actively addressing the learning outcomes in their courses and providing the outcomes on their program website, institution website, and course syllabi. The re-alignment of their program curriculum resulted from a close examination of the expectations for their capstone course. By working backwards to determine where students should acquire certain knowledge and skills, a pre-major was created. The pre-major consisted of foundational courses in the major as well as general education courses that meet the institution’s general education core requirements. Some professors have already begun to receive students who have gone through the pre-major and are reporting that those students are better prepared for their courses. By starting at this endpoint, the capstone assessment, the program has followed the constructive alignment theoretical framework. The teaching/learning strategies selected for the courses address the learning outcomes. However, these do not necessarily reflect a change from previous practices. Some professors have chosen to modify assignments and experiment with new ways of helping students achieve the intended learning outcomes. Even with no changes to assignments, as long as they address the outcomes adequately, they meet the theoretical framework’s necessity for alignment. Feedback from the capstone course will help enable the program to determine the effectiveness of the changes it has made thus far in the program.

The research questions for this study have been answered in the following ways:
1. How have the tuned learning outcomes impacted the curricula?
   a. Pre-major created for program
      i. Worked backwards to create progressive attainment of knowledge and skills
      ii. Selected courses in major for foundational skills and general education core that are most beneficial to major

2. How have the tuned learning outcomes impacted teaching/learning practices?
   a. Heightened awareness of outcomes
   b. Outcomes as guides
   c. Concerted efforts to address outcomes
   d. Experimentation and innovation
   e. Variety of strategies

3. How have the tuned learning outcomes impacted assessment?
   a. Single learning outcomes grading rubric in capstone course
   b. Variety of assessments in other courses
   c. Experimentation
   d. Area still evolving

4. How have the tuned learning outcomes impacted learning?
   a. Greater transparency of expectations
   b. Common language to describe skills acquired
   c. Pre-major created for better preparation
d. Some modification in assignments for improving learning
e. More time needed to demonstrate fully

**Limitations of the Study**

While there have been some positive results of this research in demonstrating the impact of Tuning on teaching and learning, there are several limitations as well. As with most qualitative studies, no generalizations can be made from this study to other faculty in the program nor to other programs utilizing Tuning. The main purpose was to closely examine the impact of the implementation of “tuned” learning outcomes within one specific academic program. Although a total of fifteen professors were contacted regarding the study, only five agreed to share their experiences on the use of the learning outcomes. Their experiences may or may not apply to other professors in the department or other academic programs that are participating in Tuning. Although the program in this study created a pre-major as a direct result of the use of the learning outcomes, this may not apply to other programs, especially those with an existing pre-major structure. Ensuring that students acquire the necessary knowledge and skills to successfully complete the major is the most beneficial aspect of realignment. More data will be necessary to evaluate the effect of the pre-major on student preparation and success. Finally, it will take time to demonstrate student learning and determine which assessments, in addition to the senior capstone, are best suited for measuring how well students achieve the intended learning outcomes.

**Implications of the Study**

This study has demonstrated that the theory of constructive alignment is a useful framework for examining the implementation and use of learning outcomes within an
academic program. The program in this study utilized the capstone project as its program assessment. Working backwards from there enabled the professors to determine where students should be obtaining specific knowledge and skills within the program. After this close examination, the program re-aligned its curriculum to include a pre-major that not only included program foundational courses but also included general education courses that could best benefit students in the major. Instructors also ensured that their instructional practices and learning assignments were aligned with the learning outcomes that were appropriate for their courses. Utilizing this theory to examine the proper alignment of other programs could also help ensure that the structure of the program optimizes student learning.

Early indications are that students are better prepared for their academic program because of proper alignment of courses within the curriculum. This is coupled with purposeful attention directed toward the use of discipline-specific learning outcomes. Students also have a clearer understanding of what is expected of them because of greater transparency. Identifying the most beneficial general education courses for students in a major is also worth exploring. These combined actions could help other programs achieve better results.

Another implication of this study is that the use of learning outcomes developed through the Tuning process does not interfere with professors’ autonomy in the classroom. They retain their freedom to teach in ways that they choose and develop assignments that they consider appropriate for helping students achieve the outcomes.
Recommendations for Future Research

More research is needed to determine the true effectiveness of the use of learning outcomes developed through Tuning. More programs will need to be examined, perhaps through more qualitative studies in order to get in-depth information on their use of the outcomes. Once more institutions have begun to adopt “tuned” learning outcomes in their disciplines, perhaps a more quantitative approach could capture the same type of information on a larger scale. Further research would increase the amount of information on Tuning in the U.S. and provide policy makers and stakeholders with concrete information on student learning at the discipline level. Obtaining the student perspective would provide information on whether students believe they are prepared adequately for their courses and programs. Surveys such as the Course Experience Questionnaire (CEQ), which was originally developed by Ramsden (1991, as cited in Talukdar, Aspland, & Datta, 2013), could be used to capture student satisfaction in their courses (or programs). Additional questions could be added to address achievement of the learning outcomes. Information from both professors and students could provide a more comprehensive understanding of the impact of Tuning.

Concluding Remarks

Most change efforts tend to fail because they do not spread and do not “generate sufficient benefits” (Senge, 1999, p. 7). Information obtained from this research study indicates that there is momentum to continue to ensure that the “tuned” learning outcomes are addressed and that students are better prepared. However, the implementation of the new outcomes may not be able to take full credit for the improvement in student learning. If professors were already addressing the learning
outcomes prior to Tuning, then the foundation for their use might have already been in place. The benefits that are beginning to emerge are continuing to drive their efforts in the classroom and in the program. Other departments within the institution are interested in their efforts. With more and more institutions participating in the Tuning process, it seems likely that there will be ample opportunities to follow those programs to determine the effectiveness of their “tuned” learning outcomes. This grand experiment has the potential to affect higher education in a profound way. It is my hope that this dissertation research study is only the beginning of many studies that will provide evidence of the potential of Tuning for U.S. higher education.
APPENDICES
Appendix A

Bloom’s Taxonomy

<table>
<thead>
<tr>
<th>Level</th>
<th>Descriptive Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 = Remembering</td>
<td>define, duplicate, memorize, repeat, recall</td>
</tr>
<tr>
<td>Level 2 = Understanding</td>
<td>classify, describe, explain, recognize, paraphrase</td>
</tr>
<tr>
<td>Level 3 = Applying</td>
<td>choose, demonstrate, dramatize, interpret, solve</td>
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<td>Level 4 = Analyzing</td>
<td>appraise, compare, contrast, criticize, distinguish</td>
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<tr>
<td>Level 5 = Evaluating</td>
<td>appraise, argue, defend, judge, select, support</td>
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<tr>
<td>Level 6 = Creating</td>
<td>assemble, construct, create, design, develop</td>
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Appendix B

Biggs’ SOLO Taxonomy

<table>
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<tr>
<th>Level</th>
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<tbody>
<tr>
<td>Pre-structural</td>
<td>Misses the point</td>
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<tr>
<td>Uni-structural</td>
<td>Identify; Name; Follow simple procedure</td>
</tr>
<tr>
<td>Multi-structural</td>
<td>Enumerate; Describe; List; Combine; Do algorithms; Perform serial skills</td>
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<tr>
<td>Relational</td>
<td>Compare/contrast; Explain; Analyze; Relate; Apply; Argue; Criticize; Explain causes; Justify</td>
</tr>
<tr>
<td>Extended Abstract</td>
<td>Theorize; Generalize; Reflect; Hypothesize; Formulate; Create; Generate</td>
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Appendix C
Information Letter

Dear Dr.,

My name is Dawn Stubbs and I am currently a doctoral student in the Higher Education and Organizational Change program at Benedictine University. My dissertation director is Dr. Eileen Kolich. I am conducting research for my dissertation, “The Bologna Process: The Impact of Tuning on Teaching and Learning” and wanted to ask for your assistance. I would like to gather information on the use of the learning outcomes that were developed through the Tuning process. My main goal is to examine the effect of the use of these learning outcomes on teaching practices, learning strategies, and assessment of learning.

Data will primarily come from semi-structured interviews, conducted via telephone or Skype video conferencing. I would also like to collect documentation such as correspondence on the use of the “tuned” learning outcomes, course syllabi/curricula, lesson plans, assessments, student grades (without identifying information), and student course evaluations. Results of this case study would be useful for informing others on the process of using tuned learning outcomes to demonstrate student learning.

If you are interested and available for a one- to one-and-a-half-hour interview to discuss the use of the tuned learning outcomes, please reply to me at [email] I will work around your schedule, as I understand this is a busy time of the school year. Your
participation would be greatly appreciated. Please feel free to contact me with any questions or concerns you might have about this research project.

Sincerely,

Dawn L. Stubbs

Benedictine University
Appendix D
Informed Consent Form

Benedictine University

The Bologna Process: Impact of Tuning on Teaching and Learning

To: Dr.
From: Dawn L. Stubbs
Subject: Informed Consent to Participate in Study
Date:

Dear Dr.,

My name is Dawn Stubbs, and I am an EdD student at Benedictine University. I am researching the impact of the use of learning outcomes developed through the Tuning process on teaching and student learning at your institution. I am particularly interested in these main areas: (1) How Tuning has influenced teaching practices; (2) How Tuning has informed curricula; (3) How Tuning has influenced assessment of learning; and (4) How Tuning has affected student learning.

This research will, for the first time, explore Tuning at an American higher education institution. Since the process began in 2009, there have not been any research studies documenting the influence of this methodology on the educational process. This study would shed light on the process. This research could potentially lead the way for further studies on Tuning in the United States and its use for addressing accountability in higher education.
I would like to thank you for your willingness to participate in the interview. Your participation is completely voluntary. You do not have to respond to any questions you do not want to answer and you may stop the interview at any time if you decide not to continue. Please know that your time and involvement in this study are greatly appreciated. The expected length for the entire interview is approximately one to one and a half hours. There is minimal risk for participation in this research. To ensure the integrity and accuracy of your words for the study, I will record the audio of the interview. You can request to view or hear the collected information at any time. I will call you within 3 days to set up a convenient time for the phone interview. I would also like the opportunity to contact you at a later date should further information surface that would require your input or clarification.

The interview will be tape-recorded and I will also take notes. This is done for data analysis. I will be located in my home office in [City, State]; no one will be able to overhear the conversation. The interviewee will be at the institution in a location that ensures confidentiality. The tape will be transcribed by the interviewer and kept confidential in a password-protected file. No individual identification will appear on the hard copy of the transcript. Participant identity and confidentiality will be concealed using coding procedures. For legal purposes, data will be transcribed on to a compact disc and transmitted to a Benedictine University faculty member for secure and ultimate disposal after a period of seven years. Dr. [Dissertation Director] is the Benedictine University faculty member who will secure and ultimately dispose of the information. Her information is at the end of this form. The researcher will also maintain a copy of the data in password-protected files.

I would also like to collect documentation from the course(s) you teach. This includes reports and correspondence related to the implementation of the tuned learning outcomes, curricula designed for the learning outcomes, course syllabi, sample lesson plans, assessment data, samples of student course evaluations, and course grades (without identifying information). Any documentation you provide is also voluntary and at your
discretion. This information will be treated in the same confidential and secure manner as the interview transcripts.

Interview excerpts may be included in the final dissertation report or other later publications. However, under no circumstances will your name or identifying characteristics appear in these writings. If, at a subsequent date, biographical data were relevant to a publication, a separate release form would be sent to you.

I would appreciate your signature below to indicate that you have read and agree with the contents of this informed consent. Please return this form by email to me at [email]. An electronic signature is acceptable.

________________________________________________________________________

Your electronic signature above

(If you have problems with the electronic signature please call me at [phone].)

This study is being conducted in part to fulfill requirements for my Doctor of Education degree in the Higher Education and Organizational Change program at the graduate school of Benedictine University in Lisle, Illinois.

The study has been approved by the Institutional Review Board of Benedictine University. The Chair of Benedictine University’s Institutional Review Board is [masked]. She can be reached at [phone] and her email address is [email]. The chairperson of this dissertation is Dr. [Dissertation Director]. She can be reached at [phone] or [email] for further questions or concerns about the project/research.

The study is supported by the Institutional Review Board of [masked]. The Chair of [masked] Institutional Review Board is [masked]. She can be reached at [phone] or [email]. [Masked] is the IRB Administrator. She can be reached at [phone] or [email]. [Masked] is the IRB Coordinator. She can be reached at [phone] or [email].
Sincerely,
Dawn L. Stubbs
Benedictine University
Appendix E

Interview Guide

Background Information

1. How long have you been in higher education?

2. How long have you been teaching? How long have you been teaching at the university?

3. What level(s) of courses do you teach? Freshman through senior.

4. How were the tuned learning outcomes introduced to the faculty, for example, through memos, verbally, etc.?

5. How long have you been using the “tuned” learning outcomes in your courses? Do you use them in all of the courses you teach? If not, could you elaborate on the decision to use them in the ones you do and the ones you do not?

Research Question 1: How has use of the tuned learning outcomes impacted curricula?

6. How did you incorporate the tuned learning outcomes into your curriculum/curricula?

Research Question 2a: How has use of the tuned learning outcomes impacted teaching strategies?

7. Has use of the tuned learning outcomes changed your teaching strategies? If so, how is it different? What are some of the teaching strategies you use in your courses with the tuned learning outcomes?
Research Question 2b: How has use of the tuned learning outcomes impacted learning activities?

8. Has use of the tuned learning outcomes changed the learning activities you use? If so, how is it different? What are some of the learning activities you use in your courses with the tuned learning outcomes?

Research Question 3: How has use of the tuned learning outcomes impacted assessment?

9. Has the use of the tuned learning outcomes changed the types of assessments you use in your courses? If so, how is it different? What are some of the assessment strategies you use in your courses with the tuned learning outcomes?

Research Question 4: How has use of the tuned learning outcomes impacted student learning?

10. Has the use of the tuned learning outcomes affected student performance? If so, how?

11. Has the use of the tuned learning outcomes affected student opinions or comments on the course? If so, how have they changed? Could you provide some examples?
# Appendices

## Codebook for Tuning Study

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<td>Professor introduces outcomes to students</td>
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<td>Discussed outcomes with individual faculty member(s)</td>
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<td>Explain purpose of outcomes</td>
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<td>Connecting outcomes to department and institution</td>
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<td>Autonomy</td>
<td>Freedom in Teaching Practice</td>
<td>Freedom to experiment/innovate</td>
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<td>Professor teaches in own way</td>
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<td>Voluntary use of outcomes by faculty</td>
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<td>No change in assignments</td>
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<td>Outcomes fit established teaching practices</td>
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<td>Innovating the Curriculum</td>
<td>Created pre-major</td>
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<td>Start with the end and plan backwards</td>
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<td>Outcomes serve as guide</td>
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<td>Focus on building fundamental skills</td>
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<td>Easier advisement</td>
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<td>Focus on Student Skills</td>
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<td>Building skills</td>
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<td>Gain vocabulary to describe skills</td>
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<td>&quot;progressively expand [] skills and competencies&quot;</td>
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<td>Monitor progression of skills acquisition</td>
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<td>Poorly prepared students</td>
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<td>Benefits to Students</td>
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<td>Greater transparency</td>
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<td>Clarity on practitioner identity</td>
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<td>Outcomes create common language of understanding</td>
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<td>Skills identification</td>
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<td>More productive feedback sessions</td>
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140
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<td>Outcomes provide structure</td>
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<td>Outcomes are informational</td>
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<td>&quot;it's not so much where we start; it's where we're ending&quot;</td>
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<td>Wide range of student responses to outcomes</td>
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<td>Purposeful Attention to Outcomes</td>
<td>Accepting and open to new outcomes</td>
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<td>Heightened awareness of outcomes</td>
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<td>Accommodating more student interaction</td>
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<td>&quot;mutual understanding of why we're doing it and what the point is&quot; are different</td>
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143
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Vita

Dawn L. Stubbs is currently a scientific information analyst in Columbus, OH. She earned her Bachelor of Science in Chemistry from Norfolk State University. She received her Master of Science in Chemistry from the University of North Carolina – Chapel Hill. After working for Merck & Co., Inc. as a staff chemist and Chemical Abstracts Service as a scientific information analyst, she returned to school and completed a Master of Arts in Counseling and Guidance from New Mexico State University. She has held positions as a mental health therapist at Community Behavioral Health Services in Fredonia, AZ, Mental Health Resources, Inc. in Portales, NM, and Families & Youth, Inc. in Las Cruces, NM.