ABSTRACT

Title of dissertation: AN EXAMINATION OF THE IMPACT OF LEARNING COMMUNITIES ON JOB/MAJOR CONGRUENCE AT A SINGLE INSTITUTION

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The purpose of this study was to examine the relationship between learning community participation and job/major congruence. Previous research has demonstrated that learning communities are effective vehicles for promoting student and institutional outcomes. However, few studies have examined the impact of learning communities on alumni or career outcomes. This study uses Holland's (1997) theory of vocational choice to examine how learning community participation impacts job/major congruence. Using a mixed method, concurrent embedded design, I conducted a quantitative analysis of an alumni survey at a single institution which was informed by qualitative interviews. A logistic regression analysis found that learning community participation improved one's chances of reporting job/major congruence by 5.4%. The qualitative interviews demonstrate that this improvement in congruence may be due to the unique structures and pedagogical approaches found in learning communities. Implications of the results and directions for future research are discussed.

AN EXAMINATION OF THE IMPACT OF LEARNING COMMUNITIES

ON JOB/MAJOR CONGRUENCE AT A SINGLE INSTITUTION

by

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

Over the last thirty years, a great debate has taken place in the United States on the true purpose of higher education. Academics, policy-makers, media outlets, and the general public have all weighed in on the discussion. Some contend that higher education has lost its way (Arum & Roksa, 2011; American Council of Trustees and Alumni, 2000; Association of American Colleges, 1990; Boyer, 1987; Intercollegiate Studies Institute, 2006; Schneider, 2005). Rather than preparing students to be moral or civic leaders who can address complex challenges with higher-order thinking, colleges and universities have become too focused on moving student toward jobs and careers. Others contend that colleges and universities are failing to adequately prepare their students for career success after graduation (American Association of Colleges and Universities, 2002; Boyer Commission, 1998; National Research Council, 1999). While not necessarily rejecting the civic or moral role of higher education, these individuals believe that the primary purpose of higher education is to prepare students for entry into the workforce so that the United States can effectively "compete in a global economy" (The Conference Board, Corporate Voices for Working Families, the Partnership for 21st Century Skills, and the Society for Human Resource Management, 2006, p. 7).

These debates have been quite fierce at times and have generated worthy questions about general education, disciplinary specialization, academic drift, and the role of liberal education in preparing students "to meet their civic and social obligations in the neighborhood, nation, and the world" (Boyer, 1987, p. 6). The substance of this

discussion is hardly new, however. In his comprehensive history of American higher education, Thelin (2004) points out that the purpose of higher education has been discussed and debated since the first colonial colleges were established. Though the early colleges had a strong emphasis on moral education, higher education quickly began to expand in other directions. By the 1800s, many colleges began to provide "formal training in such fields as agriculture, the military, science and engineering" (Thelin, 2004, p. 58). Similarly, Levine (1996) notes that the role higher education plays in society has shifted significantly over time and has long been critiqued for not meeting the demands placed on it by society.

In the last few decades, however, there has been a renewed emphasis on the role that colleges and universities play in preparing students for occupations (Grubb & Lazerson, 2004; Lazerson, 2010). Vocationalism, or the "direct application of schooling to jobs and economic opportunities" (Lazerson, 2010, p. 19), has become the central focus of higher education. In recent years, students have come to emphasize the career benefits of a college education over more lofty goals such as becoming a well-rounded person (Pryor, DeAngelo, Blake, Hurtado, & Tran, 2011). The Higher Education Research Institute's (HERI) most recent annual survey of college freshmen indicates that the three top reasons for pursuing a college degree include: "to be able to get a better job, to learn more about things that interest me, and to get training for a specific career" (Pryor, et al, 2011, p. 9). Clearly, the civic and moral purposes of higher education seem to be taking a back seat to the vocational benefits of a college degree, at least as far as the general public is concerned. Lazerson (2010) contends that this shift to vocationalism has resulted in three overlapping phenomena: an emphasis on disciplinary knowledge over

general learning, a lack of attention to student learning, and a separation of the student experience into distinct in-class and out of class experiences.

Lazerson (2010) argues that an emphasis on the vocational role of higher education encourages faculty members to build silos around their disciplines. Most professors are "conditioned by… [their discipline's] research community" (Lazerson, 2010, p. 121) to teach a narrow set of knowledge, skills, and approaches. As a result, the curriculum has shifted away from general knowledge and academic skills to focus almost exclusively on the academic major. Rather than teaching students how to think, faculty members simply teach those concepts most aligned with their discipline.

Second, Lazerson (2010) continues, this emphasis on vocationalism and the discipline has negatively impacted student learning. Faculty members no longer care whether students actually learn how to think. Rather, when developing curricula the conversations of faculty members focus more on "what to teach and when to teach it" (Lazerson, 2010, p. 119). Thus, higher education institutions have become increasingly interested in structuring the academic experience for maximum connection to occupations after graduation. Not surprisingly, this shift has resulted in calls by policymakers that institutions be more aligned with workforce development needs (The Conference Board, Corporate Voices for Working Families, the Partnership for 21st Century Skills, and the Society for Human Resource Management, 2006).

Finally, Lazerson (2010) concludes the vocationalism of higher education has created two distinct domains within institutions. Students have curricular experiences involving academics and learning that take place in the classroom. Additionally, they have extra- or co-curricular experiences through student involvement, community service

and residential living. Rarely do these two areas overlap. More likely than not, a faculty member has little to no understanding about a student's experience outside the classroom. Moreover, Lazerson (2010) argues, the co-curriculum has become more prominent than the curricular experience at many institutions "to the mutual satisfaction of students and professors" (p. 123). In many cases, faculty members do not want to interact with students in ways that are not related to their discipline.

Despite these concerning developments, the fact remains that higher education has become more vocationalized. As noted above, the most recent HERI survey of college freshmen indicates that the number one reason students pursue a college degree is to enhance their career prospects (Pryor, et al, 2011). Given this reality, it is no surprise that many researchers have opted to examine the relationship between a college education and career outcomes (Carnevale, Cheah and Strohl, 2011; Grogger & Eide, 1995; Grubb, 1993; Lin & Vogt, 1996; National Center for Education Statistics, 2011). If faculty believe that their primary role is to educate students on their respective disciplines (Lazerson, 2010) and students believe their reason for pursuing a college degree is to get a good job (Franke, Ruiz, Sharkness, DeAngelo, & Pryor, 2010; Pryor, et al, 2011), then research should certainly explore whether these goals are being met. Higher education researchers should examine: if faculty are effectively preparing students for careers, if college graduates secure positions that are in line with their studies, and what role the institution plays in facilitating these outcomes. The following research study explores these realities in greater depth.

Problem and Context

Given the importance that our society places on the relationship between post-secondary education and job attainment (Franke, et al, 2010; Pryor, et al, 2011), one might expect an abundance of research exploring how college impacts the ability to secure employment after graduation. In fact, while there are numerous studies linking higher education and the world of work (e.g. Carnevale, Cheah and Strohl, 2011; Grogger & Eide, 1995; Grubb, 1993; Lin & Vogt, 1996; National Center for Education Statistics, 2011), most research in this area focuses on the economic advantages of obtaining a college degree or how specific academic disciplines differ in terms of career success (Pascarella & Terenzini, 2005). Fewer studies consider how specific college-level experiences influence career attainment. In Pascarella and Terenzini's (2005) comprehensive summary of research on college students, they indicate that researchers have yet to fully explore how academic and extracurricular experiences impact career choice, aspirations, or success. Clearly, more work needs to be done connecting specific programmatic and pedagogical practices with research on career attainment so that institutions of higher education can better prepare their students for life after graduation.

Learning communities are one such programmatic intervention that colleges and universities have eagerly embraced to successfully enhance the student experience and support student outcomes (Pike, 2008; Price, 2005; Smith, Matthews, MacGregor, & Gabelnick, 2004). Though myriad types of learning communities exist in post-secondary education, Smith, Matthews, MacGregor and Gabelnick (2004) offer a comprehensive definition which captures most programs. Learning communities represent "a variety of curricular approaches that intentionally link or cluster two or more courses, often around an interdisciplinary theme or problem, and enroll a common cohort of students" (p. 20).

5

Using this definition, Smith and her colleagues note that learning communities have been established at more than 500 institutions. In fact, learning communities have become so widespread in higher education that one researcher has noted that they will soon become "the norm on college campuses" (Pike, 2008, p. 30).

Learning communities are attractive programs for institutions because they serve as effective vehicles for "enhancing student learning… in a cost effective manner" (Smith, et al, 2004, p. 20). Learning community programs positively impact a wide variety of student and institutional outcomes. When compared with their non-participant peers, students who participate in learning communities have more contact with faculty (Inkelas, Szelenyi, Soldner, & Brower, 2007; Inkelas & Weisman, 2003; Pike, Schroeder, & Berry, 1997), exhibit stronger critical thinking skills (Blimling, 1993; Lucas & Mott, 1996; Tsui, 1998), report stronger communication and problem-solving skills (Barnett, Miller, Polito, & Gibson, 2009; Lipson, Epstein, Bras, & Hodges, 2007; Smith & Bath, 2006) are more likely to be retained by an institution (Driscoll, Gelabert, & Richardson, 2010; Hotchkiss, Moore, & Pitts, 2006; Stassen, 2003; Whalen & Shelley, 2010), are more satisfied with their institution (Tinto,1997; Tinto & Love, 1995; Zhao & Kuh, 2004), create stronger relationships with peers (Inkelas, Vogt, Longerbeam, Owen, & Johnson, 2006; Pike, 1999; Pike, Schroeder, & Berry, 1997) and are more likely to talk about academics outside the classroom (Inkelas, Soldner, Longerbeam, & Leonard, 2008; Inkelas, Szelenyi, Solder, & Brower, 2007). Clearly, learning communities are effective programmatic approaches to achieving student outcomes.

Research has yet to fully explore, however, the impact that learning communities have on career outcomes (Taylor, 2003). The majority of work on learning communities

has focused on the influence these programs have on college-level experiences and outcomes (Barnett, et al, 2009; Blimling, 1993; Driscoll, et al, 2010; Hotchkiss, et al, 2006; Inkelas, et al, 2007; Inkelas, et al, 2006; Inkelas & Weisman, 2003; Lipson, et al, 2007; Pike, 1999; Pike, et al, 1997; Smith & Bath, 2006; Stassen, 2003; Tinto,1997; Tinto & Love, 1995; Tsui, 1998; Whalen & Shelley, 2010; Zhao & Kuh, 2004). Few researchers have examined the impact that learning communities have on an individual after he or she graduates from the institution (Taylor, 2003). This is surprising given the fact that many learning communities have a disciplinary focus (Price, 2005; Pike, 2008) and are designed to enhance student learning via specific curricular practices (Jones, Laufgraben, & Morris, 2006; Lenning & Ebbers, 2000; Smith et al., 2004).

Moreover, research on learning communities often lacks depth and detail (Taylor, 2003). In a comprehensive analysis of learning community research and assessment, Taylor (2003) notes that most previous research on learning communities simply examines whether these programs produce positive results. This line of inquiry is "reassuring but insufficient" (Taylor, 2003, p. 65). In order to advance understanding of learning communities, Taylor continues, researchers must begin to explore the specific practices and structures which make them successful. Developing a deeper understanding of how and why learning communities work will allow individual programs and program directors to focus on those aspects which are most effective while retooling or eliminating aspects which fail to produce desired outcomes.

Finally, Smart, Feldman, & Ethington (2000) argue that most higher education research lacks a foundation in empirically tested theories and that many studies "lack strong theoretical underpinnings" to support the examination of the constructs they seek

7

to correlate (p. 241). Researchers in higher education tend to rely on models (e.g. Astin, 1977; Pace, 1984; Bean & Metzner, 1984; Tinto, 1988; Rendon, 1994) which "often lack theoretical origins and acquire legitimacy only by virtue of the fact that others have found these correlates [which comprise the models] to be important, significant predictors of the specific student outcomes being explored" (Smart et al, 2000, p. 241). Reliance on empirically tested theories, they continue, is the preferred approach for student outcomes research.

Purpose of the Study

This study addresses these gaps in the literature by relying on Holland's (1958, 1997) theory of vocational choice to study the relationship between learning communities and job/major congruence. In doing so, I have heeded Smart, Feldman, and Ethington's (2000) advice to apply a thoroughly researched and empirically tested theory to examine the impact of learning communities on participants. Furthermore, this approach sheds light on a unique aspect of learning communities- the ability of these programs to socialize students toward an academic discipline. Thus, the study produces greater understanding of why learning communities are successful at producing positive outcomes. Additionally, the mixed methods design of this study provides much needed depth to learning community research. Finally, by focusing on job/major congruence, the study extends research on learning communities into the domain of career attainment, an important and untapped area of research.

The primary research question guiding this study is:

Are alumni who participated in a learning community program during

college more likely to achieve job/major congruence within one year of

graduation compared to their non-participant peers?

To examine this question, I draw directly from the work of Holland (1997) and Smart,

Feldman, and Ethington (2000) who apply Holland's theory to academic environments. I

extend their approach to learning community environments by specifically examining the

impact these programs have on job/major congruence.

Summary of the Literature

In the following review, I begin with a brief overview of Holland's theory (1958,

1997) paying particular attention to the notion of congruence. Next, I demonstrate that

Holland has been successfully applied to academic environments, specifically drawing

upon the work of Smart, Feldman, and Ethington (2000). Finally, I place learning

communities within the framework of Holland by exploring how these programs play a

unique role in shaping students' understanding of disciplines and preparing them for

occupations after graduation.

Holland's theory of vocational choice. In the late 1950's, John Holland

expanded upon the work of his predecessors (i.e. Bordin, 1943; Strong, 1927; Super,

1949) by noting that existing career development theories failed to take into account the

work environment and how the individual functions within it. Drawing upon the work of

Marry (1938) and Linton (1945), Holland asserted that vocational behavior was a

function of both personality and environment. Because individuals can be broken down

into "several broad classes of human interests, traits, and behaviors," (Holland, 1997, p.

6) it is possible to separate individuals into types. Doing so allows vocational counselors to direct clients into those career environments which should best suit their type.

At its core, Holland's (1997) theory of vocational choice is made up of three essential and interrelated components: personality, environments, and congruence. First, he posits that individuals can be classified into one of six personality types (i.e. Realistic, Investigative, Artistic, Social, Enterprising, and Conventional). Each individual displays distinct preferences and abilities related directly to their personality type. Second, Holland argues that there are six related work environments that mirror each personality type. Each environment has unique physical characteristics and tends to be dominated by individuals with the associated personality type. Finally, Holland contends that an individual's behavior is determined by the interaction between personality type and work environment. The level of fit between work environment and personality is a concept known as congruence. Individuals who find themselves in congruent environments will achieve higher levels of success, stability, and satisfaction.

Holland (1997) emphasizes that the theory only holds when one takes into account or controls for individual characteristics such as "age, gender, geography, social class, physical assets or liabilities, educational level attained, intelligence and influence" (p. 13). He concedes that societal role expectations shape personality as well as limit the range of vocational choices available to some individuals. Holland (1997) encourages researchers utilizing his theory to at least account for gender, race, and intelligence in their analyses.

A substantial body of work has emerged over the last fifty years examining the applicability and validity of Holland's theory to a variety of individuals and settings

(Nauta, 2010). For the most part, research on Holland's theory has provided strong empirical support for the concepts of personality, environments, and congruence. Moreover, numerous studies have demonstrated that the basic tenets of the theory hold regardless of gender, race, ethnicity, or socioeconomic status (Nauta, 2010). In regard to the congruence assumption, however, research has not been able to find a substantial, strong relationship between congruence and satisfaction, performance, and success. Spokane, Meir, and Catalano (2000) suggest measuring concepts like congruence and job satisfaction is a difficult undertaking and researchers should not expect perfect linear relationships. Spokane and colleagues recommend that future research delve more deeply into those interventions that may increase congruence rather than outcomes associated with congruence such as satisfaction and success.

Despite the complex relationships between congruence and career attainment, the impact of Holland's theory on counseling psychology and career development research is unmistakable. According to Nauta (2010), researchers cited Holland in peer-reviewed journals over 2,000 times in the last ten years. In particular, a handful of researchers (Lattuca, Terenzini, Harper, & Yin, 2009; Porter & Umbach, 2006; Smart, 2010; Smart, Ethington, Umbach, & Rocconi, 2008; Smart, Feldman, & Ethington, 2000; Smart & Thompson, 2001) have utilized Holland's theory to examine the role that personality plays within academic disciplines which I turn to next.

Holland and academic environments. Smart, Feldman, and Ethington (2000) demonstrate that academic environments function in ways that are consistent with Holland's theory of vocational choices. First, students select majors that "reinforce and reward their stronger abilities and interests" (p. 126) thereby opting for environments

which match their personality type. Second, students' ratings of their interests and abilities increase over time in ways that are "consistent with the prevailing norms and values of the respective environments" (p. 168). Finally, students in congruent environments experience a greater increase in interests and abilities over time when compared to those who face incongruent environments.

These findings suggest that academic environments have a strong influence in shaping the student experience. Just like work environments, academic disciplines attract similar personalities and produce behaviors which are consistent with those personalities. The distinct approaches of faculty within academic environments directly impact the experience of those students who opt into that environment. Thus, Smart, Feldman, and Ethington (2000) argue that academic environments have a "socialization" (p. 140). effect on students as they learn the techniques, language, and modes of inquiry utilized within that discipline. As a result, all students are socialized on the perspectives and approaches of their selected environment (i.e. major).

Smart, Feldman, and Ethington's (2000) examination of academic environments is not without limitations. First, the researchers concede that choosing an academic major is a complex process that "involves many different components" (p. 104) including parental pressures, availability of major options, student perceptions of their abilities and careers, and societal expectations. Thus, Smart, Feldman, and Ethington (2000) note that it is not surprising that some female students are more likely to select majors which are not in line with their abilities and interests because external pressures overshadow occupational choice. However, while the researchers examined gender differences in

regard to major choice, they did not control for these differences; nor did they assess or control for race, ethnicity, and academic ability.

Second, Smart, Feldman, and Ethington (2000) do not consider the notion that some academic environments may be more impactful than others or more adept at socializing students. In fact, Holland (1997) argues that some environments may be more successful than others at reinforcing and rewarding individuals' interests and abilities. Though scant, some research supports this contention. In a subsequent study, Smart, Ethington, Umbach, and Rocconi (2009) found that academic environments can vary in terms of their ability to socialize students toward a discipline; some environments are just more effective than others. These findings lend support for the possibility that some academic environments are more impactful than others.

The limitations presented above do not call into question the findings of Smart, Feldman, and Ethington (2000). Rather, they simply present some additional pathways for exploring the relationship between academic environments and the student experience. Specifically, the limitations suggest that student background characteristics must be controlled for and that some academic environments may be more successful than others at socializing students toward a discipline. Learning communities, which I turn to next, represent their own type of academic environments and have interesting implications for both Holland's (1997) theory and the work of Smart, Feldman, and Ethington (2000).

Learning communities. Though they have recently gained prominence on college campuses, learning communities have existed in some form in higher education since the 1920s (Smith, et al, 2004). This long history has resulted in a broad variety of

13

learning community programs in American higher education. While many learning community programs are built upon an academic foundation, others are completely residential in nature. The fact that so many different types of learning communities exist, makes it very difficult to find a single comprehensive definition. However, this study utilizes the one proposed by Smith and her colleagues (2004) which defines learning communities as "a variety of curricular approaches that intentionally link or cluster two or more courses, often around an interdisciplinary theme or problem, and enroll a common cohort of students" (p. 20).

Even though learning communities may vary considerably in terms of their structure and focus, an abundance of research has been conducted on these programs. The majority of this research focuses on the impact that participation in a learning community has on students (Taylor, 2003). Previous research has demonstrated that learning communities can contribute to effective college experiences for students, which in turn, lead to desirable academic and social outcomes (Barnett, et al, 2009; Blimling, 1993; Driscoll, et al, 2010; Heiss et al., 2008; Hotchkiss, et al, 2006; Inkelas, et al, 2007; Inkelas, et al, 2006; Inkelas & Weisman, 2003; Lipson, et al, 2007; Pike, 1999; Pike, et al, 1997; Smith & Bath, 2006; Stassen, 2003; Tinto,1997; Tinto & Love, 1995; Tsui, 1998; Whalen & Shelley, 2010; Zhao & Kuh, 2004). Research has yet to fully explore, however, why learning communities have such positive impacts on students (Taylor, 2003). More work needs to be done on the specific practices and structures which make them successful.

Smith, MacGregor, Matthews, and Gabelnick (2004) contend that effective learning communities must be built upon five core practices: community, diversity,

integration, active learning, and reflection and assessment. All of these practices are important, but in terms of the role that learning communities play in socializing students toward an academic discipline, active learning is an essential component. Bonwell and Eison (1991) define active learning as any pedagogical technique "that involves students in doing things and thinking about the things they are doing" (p. 19). Broadly defined in this way, active learning techniques have been linked to a variety of student learning outcomes (Burke & Ray, 2008; Cabrera, Colbeck, and Terenzini, 1998; Carini, Kuh, & Klein, 2006; Gier and Kreiner, 2009; Pundak & Rozner, 2008; Matveev & Milter, 2010; Reynolds and Hancock, 2010; Tsay & Brady, 2010; Umbach and Wawrzynski, 2005; Weldy and Turnipseed, 2010; Zeng & Johnson, 2009). Moreover, many active learning techniques rely on discipline-based inquiry or solving real-world problems in the classroom (Bonwell and Eison, 1991). These approaches, therefore, provide students the opportunity to gain exposure to disciplinary approaches while building skills linked with that discipline or academic environment (i.e. academic socialization).

Smith and Bath's (2006) examination of the impact of learning communities on student outcomes provides a cogent example of how students engaged in active learning are socialized toward an academic discipline. Those students who were exposed to a learning community environment reported a greater understanding of discipline skills and knowledge as well as improvements in general abilities like communication, problem-solving, and critical thinking. Moreover, the researchers conclude that the "development of discipline knowledge also appears to be more closely tied to… curricula designs [which] incorporate opportunities for students to interdependently engage with the material to be learned [and] with each other" (p. 276). Thus, learning communities that

rely on active learning approaches strongly expose students to disciplinary knowledge and skills. In fact, researchers who have examined discipline-based learning communities have consistently found that the learning community connects students more closely to the content of the discipline (Barnett, et al, 2009; Mickelson, Harms and Brumm, 2007; Purdie, Williams, & Ellersieck, 2007). These findings provide support for the notion that these programs function as academic environments that successfully socialize students toward a discipline.

Despite the plethora of research focused on learning communities and the positive impacts these programs have on students, this literature base is not without its limitations. As outlined above, learning community research lacks detail, rarely explores the underlying structures that underpin program success, and has yet to examine the impact of these programs on alumni or career outcomes (Taylor, 2005). Trow's (1991) longitudinal study of the effect of learning communities on alumni two decades after graduation is one exception. While this qualitative study demonstrated that learning community participation had a positive impact on participants' personal and professional development, it did not directly measure the relationship between learning communities and specific alumni outcomes such as job/major congruence. In fact, there are no known studies that address the relationship between learning community participation and job/major congruence.

Given the ubiquity of learning communities on college campuses (Pike, 2008; Price, 2005; Smith et al., 2004) it is essential that future research shed more light on the specific structures and practices that make learning communities successful enterprises. By addressing the limitations cited above, higher education researchers can gain more

insight into the level of impact that learning communities have on their participants. The current study addresses these limitations by examining the intersection of learning communities and academic environments by using Holland's theory of vocational choice as a foundation for this inquiry.

Summary of the Methods

In order to address my research question and examine the impact of learning community participation on job/major congruence, I conducted a mixed methods study at a single institution. The mixed methods approach that I utilize in this study is considered a concurrent, embedded design (Creswell, 2009). Thus, I relied on a qualitative form of data collection (i.e. interviews) to provide insight into explaining my quantitative findings. An embedded design allows the researcher to combine the qualitative and quantitative data in a way which provides "an overall composite assessment of the problem" (Creswell, 2009, p. 214) for analysis. Utilizing a concurrent embedded design allowed me to illustrate my quantitative findings and provide additional insight into the process of how learning communities work. As such, the study provides much-needed depth to the learning community literature.

My quantitative analysis primarily relies upon a secondary dataset from a single institution. I analyzed data from three administrations of an alumni survey and matched these responses to student data in order to determine learning community participation and student background characteristics. I drew upon the quantitative data to conduct a logistic regression analysis to address my research question. In addition, I conducted informal, face-to-face interviews with learning community program directors to gather specific data on each program. I then employed the qualitative data to provide insight to

17

the qualitative findings. As a single institution study, the results can only be generalized to the campus being examined. Thus, my population of interest is undergraduate alumni of that single campus.

Institutional context. The study institution is categorized as being a large, four-year, primarily residential institution with selective admissions and a very high level of research activity (Carnegie Foundation for the Advancement of Teaching, 2010). The institution has an enrollment of over 30,000 students, offers over 100 undergraduate and 100 graduate degrees, and frequently ranks as a top national university in the U.S. News & World Report rankings (U.S. News, 2011). Learning communities are a hallmark of this campus and students compete to gain entrance into over 40 different programs offered by the institution. These specialized programs are designed to enhance the student experience and make a large research institution seem smaller (institutional documents, 2011). The campus offers a diverse array of learning community options for both first-year and older students; residents and commuters. Some programs have open enrollment whereas others have competitive admission. Program options range in size from cohorts of 10 students to those with over 250 students. The first learning community program at this institution began in 1987 and additional programs have been added over the last two decades.

Given the wide range of learning communities that exist at the institution, I selected sixteen discipline-based programs which met three criteria. First, all of the programs selected have curricular requirements and students achieve a transcript notation for completing the program. Utilizing only those learning communities which have

curricular requirements ensures that the alumni in my sample have fully completed the

program to which they are connected. Second, I looked for programs which tended to rely

on active and collaborative learning in the classroom. Not only do these pedagogical

approaches most often appear in the learning community literature (Smith, et al, 2004),

but prior research demonstrates that these approaches effectively expose students to

disciplinary skills and knowledge (Smith & Bath, 2006). Finally, I attempted to create

breadth and balance in the programs I selected. My primary concern was that the findings

of the study would be too limited if the selected programs did not draw from a variety of

disciplines. In other words, if the learning communities selected for the study drew

mostly from professional disciplines such as business or engineering, the applicability to

other majors would be reduced. Thus, as I reviewed the program websites, I noted the

disciplinary focus or theme of each program as well as which majors were eligible for

participation.

      Program director interviews. To ensure that each program met the criteria

outlined above, I conducted informal, face-to-face interviews with program directors of

the targeted programs. In addition to confirming that the programs fit within the study,

these interviews provided greater context for each learning community. Interviews were

semi-structured with defined questions and potential follow-ups (see Appendix A for a

copy of the interview protocol). A semi-structured design allows the researcher to create

a standardized approach for interviews while maintaining enough flexibility to pursue an

interviewee's responses for depth and clarity (Fortado, 1990; Lodico, Spaulding, &

Voegtle, 2006). During the interviews, I followed the general structure of the protocol

while occasionally stopping to ask clarifying questions. All sixteen interviews were

conducted face-to-face in faculty director offices. Responses from the interviews were recorded and compared to ensure viability for the study and to identify themes which might shed light on my quantitative findings.

Survey data. Every three years the Office of Institutional Research at the study institution surveys alumni who have graduated in the prior year. One portion of the survey focuses on post-graduation employment. Respondents are asked to provide their current employment status and to rate the degree of job/major congruence they have achieved. This measure serves as my dependent variable. In addition to the alumni survey, I utilized institutional data to determine whether respondents participated in one of the targeted learning community programs while at the university and to determine Holland personality type and control for various background characteristics for each respondent.

Variables and measures. Holland's (1997) constructs of personality, environment, and congruence are the foundation for this study. Each variable included in the study is consistent with previous literature examining Holland's theory and/or learning communities. The dependent variable, job/major congruence, is taken directly from the alumni survey and measures whether a respondent views his or her current job as related to his or her major upon graduation. The primary independent variable of interest is participation in a learning community which I assessed by examining student records. Holland type was measured by accessing student records for major upon graduation and converting to single-letter Holland type using the "College Majors Finder" (Rosen, Holmberg, & Holland, 1989). Control variables included race, gender,

SAT score, and survey cohort. I also included a variable for undecided students. Though most Holland research (see Allen & Robbins, 2010; Schaefers, Epperson, & Nauta, 1997) excludes undecided/undeclared students, I was not willing to sacrifice a large portion of the sample especially given the possibility that this group may provide unique insights into the role that learning communities play in socializing students toward a discipline.

Data screening. I made a number of data decisions to ensure that the data were utilized fully and appropriately for my research question. I opted to remove one response category from my dependent variable due to concerns over interpretation and the fact that prior research on job/major congruence generally treats this variable as an ordinal or dichotomous variable. Additionally, the sample had a low number of Realistic and Conventional Holland types (i.e. less than 3% in each category). Due to this underrepresentation, I decided to restrict my analysis to the remaining four dominant types (Investigative, Artistic, Enterprising, and Social). Finally, in order to maintain an effective sample size, I chose to impute SAT scores for those who were missing this data point. I utilized the average SAT score for each major for imputation. In cases with fewer than three individuals for a given major, I imputed the overall sample mean. A missing data analysis revealed that those missing SAT scores were more likely to be from an underrepresented group and undecided at entry. This group was also less likely to participate in a learning community program.

Analytic approach. To address my research question examining the relationship between learning community participation and job/major congruence, I employed a logistic regression analysis. Logistic regression is the appropriate approach because the

dependent variable is a binary outcome (Cohen, Cohen, West, & Aiken, 2003). In addition, logistic regression analysis allows the researcher to examine the strength and direction of a relationship between a variable of interest and the dependent variable while controlling for other factors. Additionally, logistic regression analysis allows the researcher to draw conclusions on how probable it is that an individual will achieve an outcome based on a given set of characteristics (Pampel, 2000). In order to ease interpretation of the logistic regression analysis, I translated the logistic regression coefficients into marginal probabilities. As such, I report how each significant variable increases or decreases the probability of achieving job/major congruence. Before analyzing, I determined that the data were appropriate for logistic regression analysis. Only one continuous variable, SAT score, exists in the dataset and is normally distributed and has no outliers. Categorical variables were assessed for multicollinearity using Variance Inflation Factors (VIFs). All categorical variables in the study were well within normal range and appropriate for regression analyses.

Overview of Results

As a mixed-methods, concurrent embedded design, this study relies on both quantitative and qualitative findings to present a full picture of the research question at hand. The program director interviews confirmed that the programs were appropriate for inclusion in the study. Each program has a disciplinary focus, relies on active learning techniques, and draws from a variety of majors. In addition, the interviews revealed that the small, cohort-based model allowed these programs to build a strong community among participants as well as increase faculty contact with students. Program directors

noted that the structure of the learning communities help to facilitate achieving program goals. For example, incorporating active learning techniques into the program is viable due to the strong community of learners and length of time the students are together in their cohorts. In addition, the interviews revealed that each learning community program demonstrates a different level of disciplinary focus and emphasis on active learning pedagogy. Some programs have a high focus on disciplinary skills and knowledge, while others are a bit more diffuse in their approach. Similarly, some programs incorporated active learning pedagogy on a frequent basis, while others were less likely to do so.

The quantitative analyses indicate that alumni of the study institution are very likely to achieve job/major congruence one year after graduation. Nearly eighty-seven percent (86.8%) of respondents indicated congruence. The likelihood of achieving job/major congruence varies slightly depending on individual characteristics. Individuals from underrepresented groups are slightly less likely to report job/major congruence. Similarly, those who entered the institution as undecided are also less likely to achieve congruence. In regard to Holland type, Artistic personalities are slightly less likely to achieve job/major congruence whereas Social personalities are slightly more likely to report congruence. Gender, SAT score, and cohort have no significant impact on the likelihood of achieving job/major congruence.

Finally, the logistic regression analysis indicates that there is a positive relationship between learning community participation and achieving job/major congruence one year after graduation. Specifically, learning community participants improve their chances of achieving congruence by about five percent (5.4%). This effect holds regardless of gender, race, academic ability, discipline, or survey cohort.

Discussion and Implications

No known previous research has attempted to examine the relationship between learning community participation and job/major congruence. As such, the findings presented above represent a new direction for learning community research. Not only do the findings indicate that learning community participation increases one's chances of achieving job/major congruence after graduation, but the unique mixed methods design provides insight into why this may be the case.

The learning communities included in this study represent distinct academic environments which have unique socialization effects on students. Each program focuses on particular knowledge and skills associated with its respective discipline. In addition, these learning communities rely extensively on active learning pedagogy to impart those concepts. Utilizing active learning approaches enhances students' learning and allows them to apply the knowledge and skills associated with their particular discipline in ways that one might not find in a traditional classroom. Faculty directors noted that the small, cohort-based nature of their program allowed them to pursue approaches and techniques that they would never have time for in courses taught outside the learning community. As a result, the process that these programs use in socializing students toward an academic discipline may be more intense than what one would find in an academic major alone. Previous research (Barnett, et al, 2009; Mickelson, et al, 2007; Purdie, et al, 2007; Smith & Bath, 2006) supports this notion. Thus, learning community participants have a distinct advantage in achieving congruence over those who did not participate in a learning community.

Limitations. While the findings are generally positive, they are slight. It is

possible that the results would be stronger if some of the limitations of the study were

eliminated. First, as a secondary data analysis, I was limited to relying upon previously

created measures. I was unable to directly assess Holland type and I was forced to reduce

my sample size due to a response option that is generally not found in the congruence

literature. Second, the alumni survey is administered by the institution one year after

graduation. Previous research has demonstrated that surveying alumni so close to

graduation does not present the most accurate picture of their employment status

(Cabrera, Weerts, & Zulick, 2005). Third, I opted to combine learning community

programs because, treated separately, the sample sizes for each program would not have

been sufficient for meaningful statistical analysis. However, the experiences of students

in these programs were not entirely equal because some programs had a stronger

disciplinary focus or utilized active techniques more frequently. Moreover, some students

at the study institution may have participated in a learning community not included in this

study. Thus, it is possible that the study does not fully account for the impact of learning

communities on job/major congruence for all respondents. Fourth, this study does not

fully account for labor market trends. That being said, the primary research question

compares the experiences of learning community participants and their non-participant

peers. Given that the learning communities in the study represent a wide range of

disciplines, any employment trends present during the study period should have affected

both groups equally. A final limitation of this study is selection bias in the sample. It is

entirely possible that students who choose to participate in learning communities share

some unique quality that makes them more likely to experience job-major congruence.

Thus, any conclusions drawn about this group may have more to do with these shared characteristics than the impact of participation in a learning community.

Future research. Researchers seeking to replicate and enhance the findings of this study are encouraged to build upon this study's findings by directly addressing the limitations presented above. An ideal study for examining the relationship between learning community participation and job/major congruence would be longitudinal in nature and include data from multiple institutions. By tracking participants over time, the researcher would gain a more nuanced understanding of how learning communities impact student and alumni outcomes. Additionally, such an approach would increase the generalizability of the findings and create opportunities for developing partnerships between institutions in exploring best practices.

The qualitative findings of this study provide strong support for the notion that learning community programs play an academic socialization function. These findings build upon previous work by Smart, Feldman, and Ethington (2000). Additional research might specifically explore how learning communities impact major selection for participants. Moreover, as with academic departments, learning communities may also exhibit a range of environmental identities which could have differential effects on participants. Researchers may want to also explore the impact that learning communities have on other career or alumni outcomes such as job satisfaction, career stability, and success. Doing so might involve measuring the opinions of workplace supervisors on the ability of the employee to be successful in the job.

Finally, it is entirely possible that learning communities impact alumni in other important ways. Monks (2003) demonstrated that alumni who had greater levels of engagement and satisfaction as students were more likely to donate to their institution. It is possible that similar effects could occur as a result of learning community participation. Thus, future research may want to explore whether learning community participation impacts institutional identity and giving.

Implications for practice. The current findings add to the long list of research indicating that learning communities have positive impacts on participants (Barnett, et al, 2009; Blimling, 1993; Driscoll, et al, 2010; Inkelas, et al, 2007; Inkelas, et al, 2006; Inkelas & Weisman, 2003; Hotchkiss, et al, 2006; Lipson, et al, 2007; Lucas & Mott, 1996; Pike, 1999; Pike, et al, 1997; Smith & Bath, 2006; Stassen, 2003; Tinto,1997; Tinto & Love, 1995; Tsui, 1998; Whalen & Shelley, 2010; Zhao & Kuh, 2004). Taken together, these positive findings indicate that allocating resources to learning communities is well worth the cost. In fact, the current study indicates that the benefits of learning community participation extend beyond the student experience and into the alumni realm. Institutions are encouraged to conduct campus studies of their own learning community programs to determine what positive effects they have on students and alumni. Additionally, alumni relations offices could target learning community participants given that these individuals may be more likely to donate time and resources to the campus.

These findings could also be utilized in promoting learning communities to prospective students and their families. Given that the vast majority of students pursue

higher education to enhance their job prospects (Franke, et al, 2010; Pryor et al, 2011), many students and parents would be interested to know that learning community participation can improve one's chances of finding a job that is congruent with his or her major. Additionally, this study indicates that students from underrepresented groups and those who enter the university as undecided are less likely to achieve job/major congruence after graduation. Given this finding, institutions may want to consider providing additional career programming directly targeted at these students or encourage them to participate in learning communities.

For program directors, the findings of this study offer evidence that learning communities seem to be playing an important role in shaping students' career choices. As such, directors may want to incorporate a greater focus on careers or make these aims more explicit as they reassess their programs. Additional events with professionals and alumni which directly relate to careers and occupations may enhance the participant experience and provide greater depth to the learning community. Disciplinary-based learning communities may also benefit from stronger ties to alumni and professionals in careers related to the particular discipline of the program. Such relationships allow the program director to stay more closely tied to industry developments which could help shape classroom projects and learning.

Summary

The current study represents a significant first step into a new area of learning community research. To date, no known research has been conducted on learning communities using Holland as a lens. The results of this study indicate that academic

socialization may be an important function of learning communities. Additionally, this study expands learning community research into alumni outcomes. Further research on the academic socialization function of learning communities and the impact these programs have on alumni and career outcomes are important and untapped areas for exploration. Considering that colleges and universities have spent considerable time and resources to establish learning communities, the results provide positive reinforcement that such programs continue to impact students after graduation. Institutions, as well as program directors, can utilize these findings to further shape how learning communities are structured.

In the next chapter, I provide a detailed review of the literature starting with Holland's (1997) theory, turning to an overview of academic environments, and finishing with a survey of learning community research. In Chapter 3, I explain the methodology of the current study, providing insight on both the qualitatitive and quantitative analyses that I utilized. Chapter 4 presents the results of the study. Finally, in Chapter 5 I discuss the findings in greater detail and provide recommendations for future research as well as implications for practice.

CHAPTER 2: LITERATURE REVIEW

In this chapter I explore the existing literature as it relates to my research

question. I begin with an overview of Holland's (1958, 1997) theory of vocational

choices, briefly addressing its origins and then explaining the constructs and assumptions

of the theory in full. Given the focus of my study, I pay particular attention to the notion

of congruence and how researchers have approached this concept. In the next section, I

examine how Holland's theory has been successfully applied to post-secondary academic

environments. This section draws extensively on the work of Smart, Feldman, and

Ethington (2000) who demonstrate that academic environments have unique impacts on

college students. In the third section, I extend this research to learning community

programs. I begin by providing background on learning communities and how these

programs impact students. Next, I describe how these programs shape students'

disciplinary knowledge and skills. I end with a presentation of the conceptual framework

that guides this study.

Holland's Theory of Vocational Choices

   Background and history. The idea of matching individuals to jobs or careers has

been around for quite some time. Tinsley (2000) notes that even Plato contended that

individuals should be assigned to jobs that match their "temperaments and abilities" (p.

148). Turning to the modern era, a number of vocational choice theories sprung up in the

early 20th century (Donnay, 1997). Building upon work by Parsons (1909), which posited

that vocational choice could be addressed systematically and scientifically, a number of

applied psychologists began exploring how vocational counselors might assist individuals in placing jobs based on their aptitudes and interests. One of the most notable theorists to emerge out of this work was Strong (1927) who contended that individuals could be categorized into groups by their interests and that occupations could be differentiated by those interests. Strong developed an interest inventory to classify interests and occupations that is still in use to this day (Donnay, 1997). By the 1940s, interest inventories and other forms of vocational testing had become quite common in vocational counseling (Super, 1949). Applied psychologists and counselors were regularly using data driven methods to assist individuals with occupational choices.

In the 1950s, John Holland drew upon his experiences in vocational counseling and expanded upon the previous work of career development theorists (i.e. Bordin, 1943; Strong, 1927; Super 1949) by noting that interest inventories, while useful for providing insight into an individual's personality, are limited measures of vocational choice (Holland, 1958). These approaches simply focused on interests while mostly ignoring the work environment and how an individual functions within it. Agreeing with earlier theorists, Holland noted that individuals could be separated into types by breaking them down into "several broad classes of human interests, traits, and behaviors" (Holland, 1997, p. 6). He expanded upon this notion, however, by asserting that vocational behavior was a function of both personality and environment. Central to this assertion was the work of Murray (1938) and Linton (1945). Linton (1945) had suggested that environments exhibit certain traits that are manifest in the types of individuals who comprise the environment. Thus, an environment could be classified by noting the types of individuals present in that environment. Murray (1938) contended that an individual's

behavior resulted from the interplay between that individual's needs and the press of the environment. While the interplay of person and environment was not a new concept, Holland (1997) noted that it had interesting implications for vocational choice, especially in conjunction with Linton's (1945) work on environments. As such, Holland's (1997) theory of vocational choice is made up of three essential and interrelated components: personality, environments, and congruence.

Overview of Holland's theory. Holland (1997) posits that individuals can be classified into one of six personality types (see Table 1). These types represent distinct preferences, goals, beliefs and abilities held by individuals. Due to a variety of factors, individuals display preferences and abilities that can be used to classify them into one of the six types. For example, Realistic individuals prefer to work with their hands while Social individuals prefer to work with other people. Personality types develop from the "interaction between a variety of cultural and personal forces, including peers, parents, social class, culture, and the physical environment" (Holland, 1997, p. 2). These forces shape the individual's preferences to engage in some activities and avoid others. In turn, as individuals opt for certain activities, they begin to develop specific competencies that are related to those preferences.

Table 1

Holland's Personality Types

Type	Personality
Realistic	Prefer to work with objects, machines, tools, plants or animals.

Investigative   Prefer to observe, investigate, analyze or solve problems.

Artistic   Prefer to work in unstructured situations that draw upon their

creativity and imagination.

Social   Prefer to inform, train, develop or enlighten other people.

Enterprising   Prefer to influence, persuade, lead or manage other people.

Conventional   Prefer to work with data and carry out tasks in detail.

Adapted from Holland (1997)

Second, Holland (1997) argues that there are six kinds of work environments that

mirror these personality types. Each of these environments has unique physical

characteristics and tends to be dominated by individuals with the associated personality

type. This is because "the dominant features of an environment reflect the typical

characteristics of its members" (Holland, 1997, p. 42). Thus, Social environments are

dominated by individuals who like to engage in social activities, which results in an

atmosphere that cultivates social competencies and rewards people for their social

behavior. In contrast, Realistic environments are dominated by individuals who prefer to

manipulate tools and objects, which results in an atmosphere that cultivates technical

competencies and rewards people for their technical abilities. As a result, each

environment assumes its own distinct identity due to the composition of its members and

their unique preferences and abilities.

Finally, Holland (1997) proposes that an individual's behavior is determined by

the interaction between personality type and environment. The more compatible a work

environment is with one's personality type, the more successful that individual will be;

the level of fit between work environment and personality is known as congruence. Individuals who achieve congruence between personality and environment will achieve higher levels of success, stability, and satisfaction. In contrast, incongruence results in the individual feeling out of place and "unappreciated" (Holland, 1997, p. 56) and often results in low achievement, dissatisfaction and departure. The concept of congruence or person-environment fit has a long history within psychological research and displays a certain intuitive logic (Tinsley, 2000). One would not expect a person to find much success in an environment for which they were ill-suited.

      Secondary assumptions. Beyond the basic tenets of Holland's theory of vocational choice lie a number of additional propositions or "secondary assumptions" (Holland, 1997, p. 4). First, individuals generally display aspects of more than one personality type. Due to their unique life experiences and worldview, individuals may exhibit preferences and abilities found in multiple types. Holland (1997) defines this assumption as a personality pattern. For example, a person may have tendencies that categorize them as Social, Artistic, and Enterprising. Generally, the personality pattern appears in a three-letter code, representing those types which dominate for that individual, but fewer types in the pattern are possible as well.

      Secondly, personality types may share common characteristics or "psychological resemblances" (Holland, 1997, p. 23) with each other. The relationships between personality types are represented in a hexagonal model (see Figure 1). Those types that are closer together on the model more closely resemble one another; those that are further apart share fewer characteristics. This concept, known as consistency, is demonstrated by the fact that people with Realistic personality types share more common characteristics

with Investigative types than they do with Social types (which is found at the opposite end of the hexagon from Realistic). An individual's location on the hexagonal model also indicates the degree of differentiation of their type (Holland, 1997). Some individuals may be highly differentiated, or strongly exhibit characteristics of a certain type, while other individuals have more diffuse personalities spread out among a number of types. Finally, every individual's identity exhibits some measure of clarity and stability. Those with high identity display clear goals and stable behavior, while those with diffuse identities display inconsistent goals and behavior.
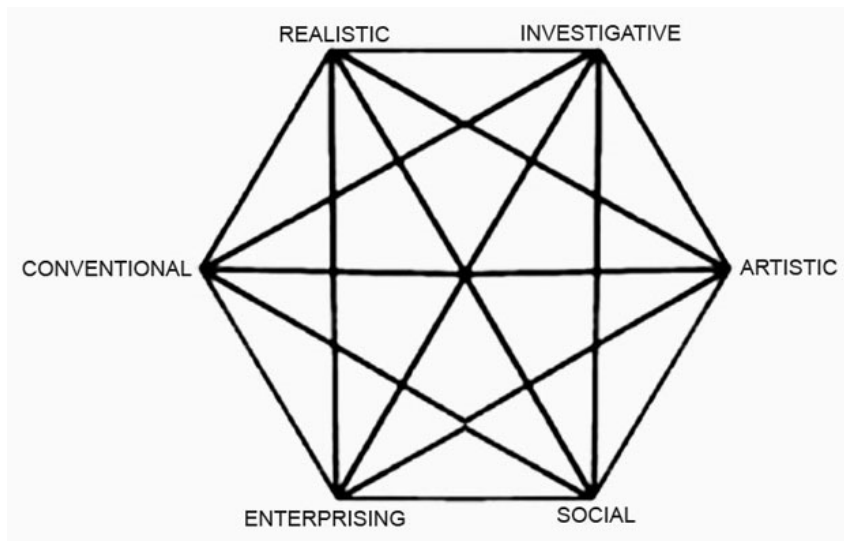
Figure 1: Holland's Hexagonal Model. Adapted from Holland (1997)

These secondary concepts of patterns and personalities can also be extended to work environments (Holland, 1997). Environments are similar to adjacent types and exhibit more differences with those types that appear further away on the hexagon (i.e. consistency). Second, environments may display a narrow range of behaviors associated

with a given type or a broader range of behaviors associated with multiple types (i.e. differentiation). Third, environments may display clear or inconsistent goals and approaches (i.e. identity). Thus, environments also display degrees of consistency, differentiation, and identity due to the fact that they are made up of individuals with various personality types. Holland (1997) notes that the secondary constructs are separate but related concepts and in many ways assess the same thing because each focuses on the level of "clarity, definition, or focus of the main concepts" (p. 5).

Holland (1997) presents one qualification to his theory that is essential to its use and interpretation. He emphasizes that the theory holds only when one takes into account various characteristics of individuals including: "age, gender, geography, social class, physical assets or liabilities, educational level attained, intelligence and influence" (p. 13). This qualification, which he titles the "other things being equal" (Holland, 1997, p. 13) clause, is rooted in the fact that members of society do not start off on equal footing. Societal role expectations shape personality as well as limit the types of careers that are available to some individuals. For example, Eccles (1994) demonstrates that women are less likely to pursue careers in science and mathematics due to gender values and societal expectations. Holland (1997) concedes that controlling for all of these characteristics is difficult but encourages researchers to at least account for gender, race, and intelligence when utilizing the theory.

Empirical support. In the fifty years since Holland first developed his theory of vocational choice, numerous researchers have explored its validity and whether the model holds across genders and various racial groups (Chartrand & Walsh, 1999; Edwards & Whitney, 1972; Nauta, 2010; Spokane, 1985; Spokane, Meir, & Catalano, 2000; Toomey,

Levinson, & Palmer, 2009). These findings have provided strong empirical support for the existence of both the personality types and their related environments. Moreover, numerous studies have demonstrated that the existence of personality types and environments apply to all types of individuals regardless of gender, race, ethnicity, or socioeconomic status (Nauta, 2010). Thus, the first two basic tenets of Holland's theory appear to be well-supported by research.

In regard to the third tenet, the congruence assumption, the evidence suggests that person-environment match does impact stability (Allen & Robbins, 2007; Bruch & Krieshok, 1981; Schaefers, Epperson, & Nauta, 1997; Spokane, Malett, & Vance, 1978), satisfaction (Dik & Hansen, 2011; Elton & Smart, 1988; Kressel, 1990; Nafziger, Holland, & Gottfredson, 1975; Perdue, Reardon, & Peterson, 2007; Smart, Elton, & McLaughlin, 1986; Tranberg, Slane, & Ekeberg, 1993), and performance (Allen & Robbins, 2010; Dayton & Uhl, 1966; Kieffer, Schinka, & Curtiss, 2004). In general, these studies indicate that individuals who achieve congruence between their personality and work environment are more stable, satisfied, and successful when compared with those who face incongruence.

Job/major congruence. In recent years a number of researchers have specifically examined the relationship between job/major congruence and satisfaction (Cabrera, et al, 2008; Fricko & Beehr, 1992; Wolniak & Pascarella, 2005). These studies fit well within Holland's theory because major is "the embodiment of a college graduate's vocational preferences and competencies" (Cabrera, deVries, & Anderson, 2008, p. 705). Attaining employment (i.e. work environment) that is congruent with one's major (i.e. personality) should result in increased satisfaction and success under the tenets of Holland's theory. In

fact, these previous studies (Cabrera, et al, 2008; Elton & Smart, 1988; Fricko & Beehr, 1992; Smart, et al, 1986; Wolniak & Pascarella, 2005) have demonstrated that employment satisfaction increases when there is a strong match between an individual's major and job. In particular, Wolniak and Pascarella (2005) found that congruence plays a significant role in satisfaction even when controlling for income. Moreover, this study also demonstrated that an individual's perceived level of congruence is more important than any actual congruence between job and major. Cabrera, deVries, and Anderson (2008) contend that these findings eliminate the need to objectively measure job/major congruence beyond simply asking the respondent to rate the level of congruence between their occupation and academic major.

Nauta (2010) notes that despite the empirical support for Holland's contention that congruence results in greater satisfaction, stability, and success, "the effect sizes of these relationships tend to be small" (p. 14) indicating that congruence may be less important in predicting these outcomes in comparison to other factors. However, in their meta-analysis of research studies focused on congruence, Spokane, Meir, and Catalano (2000) suggest that these low effect sizes can be particularly meaningful given "the multiplicity of external influences upon work and the active shaping that so often occurs in work environments cannot be captured by static research designs" (p. 179). Measuring job satisfaction is complex and one should not expect a perfectly linear relationship between congruence and satisfaction or other outcomes. Moreover, Spokane, Meir and Catalano (2000) note that researchers have a "limited understanding" (p. 179) of the factors that lead to congruence. Spokane and colleagues recommend that future research

delve more deeply into interventions that can increase congruence for individuals given the evidence that individuals who achieve congruence accrue distinct benefits.

Research that examines congruence as an outcome variable generally looks at the influence of three areas: psychological factors (Celeste, Walsh, & Raote, 1995; Cotter & Fouad, 2011; Luzzo & Ward, 1995; Nehrke, Cohen, Hulicka, & Morgani, 1988; Salomone & Pask-McCartney, 1990; Srsic & Walsh, 2001), life history (Claudy, 1973; Donohue, 2006; Oleski & Subich, 1996; Prediger & Swaney, 1986; Tracey & Robbins, 2005), and career interventions (Grotevant, Cooper, & Kramer, 1986; Hirschi, Niles, & Akos, 2011; Johnson, Smither, & Holland, 1981; O'Brien, Dukstein, Jackson, Tomlinson, & Kamatuka, 1999; Thompson, Flynn, & Griffith, 1994). Psychological factors such as self-efficacy (Luzzo & Ward, 1995) and well-being (Celeste, Walsh, & Roate, 1995) seem to be positively related to congruence. Those individuals who exhibit psychologically healthy behaviors are more likely to achieve congruence between personality and environment.

Research on life history demonstrates that as individuals progress through their career, experiencing multiple jobs and environments, they achieve greater congruence over time (Claudy, 1973; Donohue, 2006; Oleski & Subich, 1996; Prediger & Swaney, 1986; Tracey & Robbins, 2005). These findings are consistent with Holland's theory because careers are made up of a series of "person-environment interactions in which people are modified and stabilized as they select, pass through, or avoid behavior situations" (Holland, 1997, p. 61) that are congruent or incongruent with their personality.

Finally, research focusing on the influence of career interventions (i.e. workshops,

counseling sessions, etc.) on congruence has had mixed results. Thompson, Flynn, and

Griffith (1994) found that career counselor interventions had little impact on individuals

achieving congruence. In contrast, studies focusing on workshops designed to foster

career exploration and planning (Hirschi, Niles, & Akos, 2011; O'Brien, et al, 1999) have

demonstrated that such interventions can result in participants achieving greater person-

environment congruence.

Secondary constructs. Researchers have paid significantly less attention to

Holland's secondary constructs of differentiation, consistency, and identity and support

for these concepts has been mixed (Holland, 1997; Nauta, 2010). Furnham and Walsh

(2001) found that psychiatric nurses with more experience tended to exhibit greater

inconsistency and more diffuse personalities compared to younger nurses. This finding

seems to disconfirm Holland's secondary constructs. In contrast, a recent study of

rehabilitation counselors (Leierer, Blackwell, Strohmer, Thompson, & Donnay 2008)

demonstrated that most individuals in that field were highly differentiated and consistent

in type. Looking directly at the constructs themselves, Leung, Conoley, Scheel and

Sonnenberg (1992) found that there was no relationship between the constructs of

identity, consistency or differentiation despite the fact that the three are all prefaced on

Holland's personality types.

In response to these critiques, Holland (1997) argues that the secondary constructs

"contribute independent information on the same or similar outcomes" (p. 151) and

should always take a back seat to the primary focus on person-environment fit. Moreover,

he notes that most research on the secondary constructs tends to focus on how they are

measured or defined rather than what role they play in the overall theory of congruence. An exception to this rule is a study by Perdue, Reardon, and Peterson (2007) who found that those who worked in an environment with a strong identity were more satisfied with their jobs. This study lends support to the notion that environmental identity matters as Holland has predicted. However, more research on Holland's secondary constructs is clearly needed.

Despite the lack of research on the secondary constructs, the impact of Holland's theory on counseling psychology and career development research is unmistakable. According to Nauta (2010), researchers cited Holland in peer-reviewed journals over 2,000 times in the last ten years. In particular, a handful of researchers (Lattuca, Terenzini, Harper, & Yin, 2009; Porter & Umbach, 2006; Smart, 2010; Smart, Ethington, Umbach, & Rocconi, 2008, Smart & Thompson, 2001) have utilized Holland's theory to examine the role that personality plays within academic disciplines which I turn to next.

Holland and Academic Environments

Smart, Feldman, and Ethington (2000) apply Holland's theory to higher education settings by examining the role that academic environments have on student major selection and skill development. Their research is based on three assumptions that directly relate to Holland. First, students select academic environments that are compatible with their personality type. Just as with occupations, individuals are drawn to environments that complement their interests and abilities. Second, academic environments provide opportunities to engage in activities and develop competencies that are directly related to that environmental type. The academic environment thereby "reinforce[s] and reward[s]" (Smart, et al, 2000, p. 54) those talents and abilities most

tied to that academic discipline. Finally, those students who select environments that best fit their personality type will thrive and succeed. Those who achieve congruence will develop a greater interest in the discipline and improve in the skills most necessary for success in that field.

Academic socialization. Central to Smart, Feldman, and Ethington's (2000) study is the role that academic environments play in shaping the student experience. The researchers point out that institutions are built around faculty divided into distinct academic disciplines. These disciplines, whether found generally in schools or specifically in departments, constitute distinct environments comprised of shared competencies, practices, and cultures. Just like work environments, academic disciplines attract like personalities and produce behaviors that are consistent with those personalities. As a result, faculty members "place greater value on" particular educational goals and pedagogical practices that "are consistent with their own academic environments" (Smart, et al, 2000, p. 96). Thus, faculty in Investigative environments tend to utilize structured approaches in the classroom (i.e. lecture) and focus on the subject matter, whereas faculty in Social environments prefer more informal approaches (i.e. small-group discussion) and focus on student interactions and dialogue.

Smart, Feldman, and Ethington's concept of discipline is informed by Biglan's (1973) classification system for academic departments. This schema classifies departments along three dimensions: hard versus soft, pure versus applied, and living versus non-life systems (Biglan, 1973, p. 197-198). Smart, Feldman, and Ethington note that higher education researchers have frequently cited Biglan's classification system in studying academic departments. However, they argue that Holland's (1997) approach has

42

a stronger theoretical foundation and is more comprehensive. Because all academic departments can be classified into one of six environments types, the notion of discipline has greater inclusivity. Thus, researchers can address the impact of multidisciplinary departments or majors which may not easily be classified using Biglan's typology. As a result, Smart, Feldman, and Ethington use the terms discipline, academic department, and field interchangeably throughout their work with each of these synonyms being conceptualized as environmental types in Holland's theory.

The distinct approaches of faculty within academic environments have direct impacts on the experience and behavior of those students who opt into each respective environment. Smart, Feldman, and Ethington (2000) argue that academic environments have a "socialization" (p. 140) effect on students as they learn the techniques, language, and modes of inquiry utilized within that discipline. Thus, all students are socialized to the perspectives and approaches of their selected environment (i.e. major). However, this socialization effect has differential impacts on students. Those students who are congruent with their selected environment (i.e. major) should find an increase in their abilities and interests associated with that environment. In contrast, those students who find themselves in incongruent environments should experience less growth in their associated interests and abilities. This assumption is consistent with Holland's (1997) contention that incongruence results in lower achievement for the individual.

Methodology. In order to test the assumptions of their hypothesis, Smart, Feldman, and Ethington (2000) examined Cooperative Institutional Research Program (CIRP) data for students who had attended a four-year institution during the period 1986 to 1990. Utilizing questions from the CIRP survey that asked students about their

interests and abilities, the researchers created subscales to match respondents to four Holland types (Artistic, Enterprising, Investigative, and Social). The Realistic and Conventional categories were dropped from the analysis due to the fact that a small number of respondents exhibited these personality types. Students were then classified to one of the four dominant types based on their responses to the CIRP subscale questions. Initial major for each student was recorded and transformed into Holland type using The College Major Finder (Rosen, Holmberg, & Holland, 1989). The researchers then compared student personality types with their selected academic environment (i.e. major) and charted the growth of student abilities and interests over time by accessing data from the 1990 CIRP survey for the same group of students.

Findings. The findings of Smart, Feldman, and Ethington's (2000) study of college students suggest that Holland's theory can successfully be applied to the study of academic environments. Students in the analysis tended to initially select majors that "reinforce[d] and reward[ed] their stronger abilities and interests" (p. 126) thereby opting for environments that matched their personality type. In addition, these students' ratings of their interests and abilities increased over time in ways that were "consistent with the prevailing norms and values of the respective environments" (p. 168). Thus, as the researchers hypothesized, the academic environment socialized the student to the discipline. Finally, students in congruent environments experienced a greater increase in interests and abilities over time when compared to those who faced incongruent environments. Meanwhile, those students who experienced incongruence between major and personality type saw only slight increases in their interests and abilities (or, in some cases, decreases).

It should be noted that these findings varied somewhat by personality type and gender. Increases in student ratings of interests and abilities were less pronounced for Artistic and Social types, but still exhibited some positive movement for congruent individuals. Additionally, females were more likely drawn to Social majors and males generally found in Investigative majors even when their personality type was incongruent with that environment. Smart, Feldman, and Ethington (2000) postulate that these gender differences are due to societal pressures that socialize genders into certain occupations.

Limitations. The tendency for males and females to select certain majors despite their interests and abilities points to a limitation of both Holland's theory and the work by Smart, Feldman, and Ethington (2000). Choosing an academic major is a complex process that "involves many different components" (Smart, et al, 2000, p. 104) including parental pressures, availability of major options, student perceptions of their abilities and careers, and societal expectations. Holland (1997) addresses the complexity of occupational and major choice with the caveat that the assumptions of his theory hold, all "other things being equal" (p. 13). Thus, individuals will not always select the most appropriate environment for their personality type. Unfortunately, Smart, Feldman, and Ethington's methodology did not allow them to hold gender constant; the researchers could only compare students by gender in regard to their outcome measures.

A second limitation of Smart, Feldman, and Ethington's (2000) study is the researchers' contention that academic environments act upon students in universal ways. They do not consider that some academic environments may be more impactful than others or more adept at socializing students. As noted above, the researchers contend that academic environments rely on distinct approaches and that these manifest themselves in

different ways. Smart and his colleagues do not address, however, the idea that disciplines that fall within the same Holland environment may differ from each other in terms of how well they socialize students. In other words, it is entirely possible that a chemistry department exposes its students to the discipline more effectively than a physics department. Moreover, due to resource constraints or level of commitment to student teaching, some academic departments may simply be better than others at socializing students. The question arises: are some academic environments more successful than others at socializing students?

Environmental identity. While previous research on academic environments does not directly address the idea that some environments are more impactful than others, Holland (1997) does offer support for this notion by noting that some environments may be more successful than others at reinforcing and rewarding individuals' interests and abilities. More specifically, Holland contends that environments with high identity have a "limited set of consistent and explicit goals, whereas those with a diffuse identity are characterized by a large set of conflicting and poorly defined goals" (as cited in Smart, et al, 2000, p. 257). Thus, some students may experience academic environments that have high identity while other students experience diffuse environments. These environmental differences result in differential impacts on college students with some students being more socialized than others.

Unfortunately, just as research on Holland's secondary constructs is scant, even fewer researchers have explored these concepts in regard to academic environments. Looking at the concept of environmental consistency, Smart, Ethington, Umbach, and Rocconi (2009) found that faculty in consistent environments were more likely to

promote the competencies and values most related to that environment compared to faculty in inconsistent environments who promoted a wider variety of approaches. In regard to student learning, Smart (2010) found that students who were exposed to consistent environments were more likely to develop competencies associated with that environment. These studies lend support to the idea that academic environments may display different levels of consistency.

Only one study to date has examined the role that identity plays in academic environments. Smart and Thompson (2001) found that there were no differences between faculty in high identity and low identity environments in regard to the types of disciplinary competencies they emphasized in the classroom. The researchers note, however, that faculty self-reports on issues of environmental clarity and focus may be subjectively biased and not fully represent the true nature of the environment. Despite the lack of support for the notion that environmental identity impacts students in differential ways, the earlier studies on consistency may provide support to the idea that academic environments vary in clarity and focus. As noted above, Holland (1997) contends that the secondary constructs are separate but related concepts that generally measure the same thing. If this is true, then it is possible that some academic environments may be more impactful than others in terms of socializing students toward a discipline.

The limitations presented above do not call into question the findings of Smart, Feldman, and Ethington (2000). Rather, they simply present some additional pathways for exploring the relationship between academic environments and the student experience. Specifically, the limitations suggest that student background characteristics must be controlled for and that some academic environments may be more successful

than others at socializing students toward a discipline. Learning communities, which I turn to next, represent their own type of academic environments and may have interesting implications for both Holland's (1997) theory and the work of Smart, Feldman, and Ethington (2000).

Learning Communities

Background and history. The idea of creating a learning community on a college campus has deep historical roots. Though they first appeared in a basic form during the 1970s, grew in the 1980s, and gained prominence in the 1990s, learning communities trace back to the work of John Dewey and Alexander Meiklejohn in the 1920s (Smith, MacGregor, Matthews, & Gabelnick, 2004). Dewey's (1938) ideas on progressive education challenged teachers to intentionally place the student at the center of their practice; to find ways to engage the student in an inquiry process about the material that would facilitate learning. Though Dewey's work generally focused on primary and secondary education, his insights on teaching also impacted how college students are taught in the classroom. Much of the recent emphasis on active and collaborative learning in higher education can be traced back to Dewey's philosophy on education.

Around the same time that Dewey gained prominence in education circles, Alexander Meiklejohn had begun to express his own concerns about higher education (Smith et al., 2004). Meiklejohn was particularly troubled by the increasing focus on electives and specialized majors to the detriment of general education. A strong believer in liberal education, he believed that it was more important for students to learn "how to think, not what to think" (Smith et al, 2004, p. 30). In the late 1920s, Meiklejohn was

given the opportunity to bring these ideas to life at the University of Wisconsin by founding the Experimental College. This optional, two year program consisted of a common required curriculum pursued by all students focusing on Western civilization and classic literature. The classroom experience was built around discussion-based seminars as opposed to the traditional lecture format. In addition, the program had a distinct emphasis on community. Students lived together in the same dormitory and were encouraged to pursue athletics and clubs in order to develop the body, as well as the mind.

Though the Experimental College only operated for five years, it had a profound impact on higher education. Joseph Tussman, a colleague of Meiklejohn's at the University of Wisconsin, successfully established similar programs at both the University of California-Berkeley and San Jose State University during the 1960s (Smith et al, 2004). These programs drew upon the initial curricular structure and strong emphasis on community that was found in the Experimental College. Both programs were also short-lived but they "established a model" for other colleges and universities to follow in the ensuing years (Smith et al, 2004, p. 37). Learning communities began to spring up across the country and as institutions established these programs they learned from the mistakes of the past; creating structures and approaches that assured their success and longevity. Currently, it is estimated that learning communities have been established at more than 300 institutions and can be found at all types of institutions, whether two-year or four-year, public or private (Washington Center, 2011).

Definition and forms. Despite the deep history of learning communities in American higher education there are still myriad types of learning communities on

college campuses (Pike, 2008). The varied nature of learning communities and how institutions structure and implement these programs make it very difficult to find a single comprehensive definition. Smith, MacGregor, Matthews, and Gabelnick (2004) define learning communities as "a variety of curricular approaches that intentionally link or cluster two or more courses, often around an interdisciplinary theme or problem, and enroll a common cohort of students" (p. 20). While this definition may seem comprehensive, Lenning and Ebbers (1999) argue that this construction is too narrow; that linked courses represent only one subset of learning communities. They refer to Smith and her colleagues' work as focusing only on cross-curricular learning communities, which is a subcategory of curricular learning communities.

Lenning and Ebbers (1999) argue that student learning communities are comprised of four types of programs. Curricular learning communities are those programs that have some sort of curricular component that connect students together. The program may or may not consist of linked courses that students take together. Residential learning communities are organized around some sort of living unit and may include required courses or simply a collective theme that links students to each other. Classroom learning communities generally refer to those classrooms where faculty employ collaborative learning techniques that compel students to work together to achieve learning goals. Finally, targeted learning communities are those programs that are geared toward a specific population of students in order to connect those students to one another on the campus.

What many institutions refer to as learning communities can be placed into multiple categories. For example, the Freshman Interest Group (FIG) program at the

50

University of Missouri has elements of all four definitions (Schroeder, 1999). This program is targeted at first-year students entering the institution. Participants live together in a residence hall organized around a specific theme and students take classes together as a group. In addition, some faculty members teaching FIG students utilize collaborative learning techniques within the classroom. Thus, the FIG program may occupy all four categories described by Lenning and Ebbers (1999). At the same time, other institutions may have programs that only occupy one of the categories described above. If the program is focused on students and is designed to promote and maximize learning, however, it meets Lenning and Ebber's overall definition of a learning community.

While this broad approach is inclusive of many types of programs, the lack of a single common definition makes comparing research findings difficult. As Taylor (2003) notes, one limitation in the learning community literature is that researchers often fail to provide a clear and comprehensive explanation of the learning community program(s) being studied. She continues: "not all learning communities are created equally, and not every student benefits equally" (Taylor, 2003, p. 66) from the program. In order to improve learning community programs as a whole, higher education researchers and practitioners need to have a deeper understanding of what makes them effective. As such, the current study relies on the more narrow definition proposed by Smith and her colleagues (2004) while keeping Lenning and Ebbers' (1999) categories in mind as possible ways to delineate among the learning communities included in the study.

Research on learning communities. Even though learning communities may vary considerably in terms of their structure and focus, an abundance of research has been conducted on these programs. The majority of this research focuses on the impact

that participation in a learning community has on students (Taylor, 2003). Students who participate in learning communities have more contact with faculty (Pike, Schroeder, & Berry, 1997; Inkelas, Szelenyi, Soldner, & Brower, 2007; Inkelas & Weisman, 2003), exhibit stronger critical thinking skills (Blimling, 1993; Lucas & Mott, 1996; Tsui, 1998), report stronger communication and problem-solving skills (Barnett, Miller, Polito, & Gibson, 2009; Lipson, Epstein, Bras, & Hodges, 2007; Smith & Bath, 2006) are more likely to be retained by an institution (Driscoll, Gelabert, & Richardson, 2010; Hotchkiss, Moore, & Pitts, 2006; Stassen, 2003; Whalen & Shelley, 2010), are more satisfied with their institution (Tinto,1997; Tinto & Love, 1995; Zhao & Kuh, 2004), create stronger relationships with peers (Inkelas, Vogt, Longerbeam, Owen, & Johnson, 2006; Pike, 1999; Pike, Schroeder, & Berry, 1997) and are more likely to talk about academics outside the classroom (Inkelas, Solder, Longerbeam, & Leonard, 2008; Inkelas, Szelenyi, Solder, & Brower, 2007). These findings demonstrate that learning communities can contribute to effective college experiences for students which, in turn, lead to desirable academic and social outcomes.

Research has yet to fully explore, however, why learning communities have such positive impacts on students (Taylor, 2003). More work needs to be done on the specific practices and structures that make them successful. Smith, MacGregor, Matthews, and Gabelnick (2004) contend that, in order to be effective, learning communities must be built upon five core practices: community, diversity, integration, active learning, and reflection and assessment. Effective learning communities offer students a sense of place within the institution, provide opportunities to encounter a variety of individuals and perspectives, integrate pedagogy and disciplines, allow students to actively construct

52

knowledge, and reflect on their learning and experiences. While each of these practices are important, active learning plays an essential role because it often "incorporates all of the core practices" mentioned above (Smith et al, 2004, p. 117). Moreover, active learning can play an essential role in socializing students toward a discipline, an important consideration for the present study.

Bonwell and Eison (1991) define active learning as utilizing any pedagogical techniques that engage students in the material, involve higher-order thinking, and encourage students to explore their own values and attitudes. Often, an active learning approach requires students to apply theories and concepts to real-world applications, thus building students' critical thinking and problem-solving skills. Active learning also tends to rely on group work rather than individual learning. Broadly categorized using Bonwell and Eison's (1991) approach, active learning techniques have been linked to higher levels of student engagement (Burke & Ray, 2008; Pundak & Rozner, 2008; Umbach and Wawrzynski, 2005; Zeng & Johnson, 2009), enhanced skill development in students (Cabrera, Colbeck, and Terenzini, 1998; Carini, Kuh, & Klein, 2006; Matveev & Milter, 2010; Tsay & Brady, 2010), and increased academic achievement (Gier and Kreiner, 2009; Reynolds and Hancock, 2010; Weldy and Turnipseed, 2010). It is not surprising that many of the outcomes produced through active learning techniques are also found in the learning community research given that active learning approaches are often utilized in learning community programs.

Active learning, with its emphasis on skill-building and real-world applications, provides an excellent framework for academic socialization. Students can easily be exposed to specific approaches and skills linked to a particular discipline. Smith and

53

Bath's (2006) examination of the impact of learning communities on student outcomes provides a cogent example of how students engaged in active learning are socialized toward an academic discipline. Those students who were exposed to a learning community environment reported a greater understanding of discipline skills and knowledge as well as improvements in general abilities like communication, problem-solving, and critical thinking. Moreover, the researchers conclude that the "development of discipline knowledge also appears to be more closely tied to… curricula designs [that] incorporate opportunities for students to interdependently engage with the material to be learned [and] with each other" (p. 276). Thus, learning communities that rely on active learning approaches strongly expose students to disciplinary knowledge and skills. In fact, researchers who have examined learning communities with a disciplinary focus have consistently found that the learning community connects students more closely to the content of the discipline.

Purdie, Williams, and Ellersieck (2007) conducted a longitudinal study of pre-veterinary students at a single institution. Those students who participated in a pre-veterinary learning community were more likely to be admitted to veterinary medical school when compared to their peers who did not participate in the learning community. These results held after controlling for student entry characteristics (i.e. race, gender, ACT score, and high school grade point average). The authors hypothesize that one reason for this finding is that students in the learning community gain unprecedented access to full-time faculty and upper-class students in the major who best know how to "challenge and support" (Purdie, et al, 2007, p. 53) their aspirations of becoming veterinarians. While this study did not directly measure the growth of disciplinary

knowledge or skills, it provides indirect support for that outcome. Gaining admission to veterinary medical school is a competitive process that requires significant exposure to the discipline. However, it is possible that a self-selection effect occurred in this study-that students who opted into the learning community were more academically driven or committed to the field than non-participants.

A study by Mickelson, Harms, and Brumm (2007) examined the impact of an agricultural engineering learning community on participants using both quantitative and qualitative methods. This particular learning community program was designed to build community among first-year students while introducing them to the concepts of agricultural engineering. Student self-reports indicated that students in the learning community reported stronger abilities in technical writing as a result of participating. Moreover, focus groups indicated that the students had a stronger grasp of engineering concepts that assisted them in their subsequent coursework. These findings lend support to the idea that learning communities can assist with the development of disciplinary skills. Unfortunately, the findings are based on student self-reports and no comparisons were made to students outside the learning community.

Finally, Barnett, Miller, Polito, and Gibson (2009) conducted a quasi-experiment that compared agriculture students in a learning community with their non-participant peers. Study participants were recruited from both within the learning community and the greater College of Agriculture. Students were split into learning community and non-learning community teams and asked to solve a real world, discipline-based problem. In order to effectively frame and solve the problem, students would need to draw upon essential agriculture skills such as: "soil sampling, nutrient recommendations, drainage,

soil conservation, geographic information system and mapping, crop management, analysis and interpretation of data gathered, farm records, budgets, and economic management recommendations" (Barnett et al, 2009, p. 6). Final reports were judged by a panel of experts in the field (i.e. faculty and industry specialists) and scored using standardized rubrics. Comparisons between participants and non-participants were made via a series of analyses of variance. In addition to displaying superior communication skills, students in the learning community exhibited a stronger grasp of technical content knowledge for their discipline. A primary limitation of this study is that no comparisons were made between the learning community participants and non-participants on entry characteristics.

The findings of Smith and Bath (2006) combined with the research on discipline-based learning communities (Barnett, et al, 2009; Mickelson, et al, 2007; Purdie, et al, 2007) provide support for the notion that these programs engage in academic socialization. Learning communities that are discipline-based and rely on active learning techniques effectively socialize students to the discipline in ways that outpace what students might receive from simply being connected to an academic department through their major. In fact, this conclusion is in line with research demonstrating that the effects of learning communities on student learning are indirect. Pike (1997) contends that participation in a learning community leads to greater academic involvement and faculty interaction, which in turn leads to student learning. Because faculty members "create the respective norms and values of academic environments" (Smart, Feldman, & Ethington, 2000, p. 81) it follows that students who have closer relationships with them would be more likely to be exposed to those norms and values. In other words, students in learning

communities are more likely to connect with faculty members and, by extension, the discipline itself.

Limitations of learning community research. Despite the plethora of research focused on learning communities and the positive impacts these programs have on students, this literature base is not without its limitations. In Taylor's (2005) comprehensive analysis of learning community research and assessment, she notes that most studies lack enough depth to have a real impact on higher education research and practice. This is because much of the research on learning communities simply examines whether the program produces positive results. Taylor (2005) argues that studies that "correlate results to pedagogical practices, curricular structures, or learning activities" (p. 65) within the learning community itself will provide greater understanding for both researchers and practitioners. Thus, even those studies cited above that focus on the impact that learning communities have on disciplinary skills fail to delve into why these programs are successful at socializing students toward a discipline.

In addition to a lack of depth to learning community research, the majority of work on learning communities has focused on the influence these programs have on college-level experiences and outcomes (Barnett, et al, 2009; Blimling, 1993; Driscoll, et al, 2010; Inkelas, et al, 2007; Inkelas, et al, 2006; Inkelas & Weisman, 2003; Hotchkiss, et al, 2006; Lipson, et al, 2007; Lucas & Mott, 1996; Pike, 1999; Pike, et al, 1997; Smith & Bath, 2006; Stassen, 2003; Tinto,1997; Tinto & Love, 1995; Tsui, 1998; Whalen & Shelley, 2010; Zhao & Kuh, 2004). Few researchers have examined the connection between learning communities and alumni outcomes (Taylor, 2003). Trow's (1991) longitudinal study of the effect of learning communities on alumni two decades after

graduation is one exception. While this qualitative study demonstrated that learning community participation had a positive impact on participants' personal and professional development, it did not directly measure the relationship between learning communities and specific alumni outcomes such as job/major congruence. In fact, there are no known studies that address the relationship between learning community participation and job/major congruence.

Finally, Smart, Feldman, & Ethington (2000) argue that most higher education research lacks a foundation in empirically tested theories and that many studies "lack strong theoretical underpinnings" to support the examination of the constructs they seek to correlate (p. 241). The vast majority of research on learning communities is grounded within the college outcomes literature. Numerous researchers (Astin, 1977; Bean & Metzner, 1984; Pace, 1984; Rendon, 1994; Tinto, 1988) have developed models examining the impact of college programmatic interventions on student outcomes such as intellectual growth, personal development, persistence, and satisfaction among many others. These models frequently form the basis for individual studies on learning communities (Taylor, 2003). Smart, Feldman, and Ethington (2000) argue, however, that these models "often lack theoretical origins and acquire legitimacy only by virtue of the fact that others have found these correlates [that comprise the models] to be important, significant predictors of the specific student outcomes being explored" (p. 241). Reliance on empirically tested theories, they continue, is the preferred approach for higher education research.

Given the ubiquity of learning communities on college campuses (Pike, 2008; Price, 2005; Smith et al., 2004) it is essential that future research shed more light on the

specific structures and practices that make learning communities successful enterprises. By addressing the limitations cited above, higher education researchers can gain more insight into the level of impact that learning communities have on their participants. The current study attempts to address these limitations by examining the intersection of learning communities and academic environments by using Holland's (1997) theory of vocational choice as a foundation for this inquiry. In the next section, I describe the conceptual framework I developed for the study based on my review of the literature presented above.

Conceptual Framework

The conceptual framework for this study (see Figure 2) builds upon the hypothesis advanced by Smart, Feldman, and Ethington (2000) that academic environments shape the student experience by socializing students to an academic discipline that manifests itself in some degree of congruence between person and environment. I expand upon their work with the proposition that learning communities function in unique ways that more effectively socialize students to a discipline. As such, I rely on a secondary construct of Holland's (1997) theory not explicitly addressed by Smart, Feldman, and Ethington (2000)—environmental identity—contending that learning community participants are more likely to achieve job/major congruence.
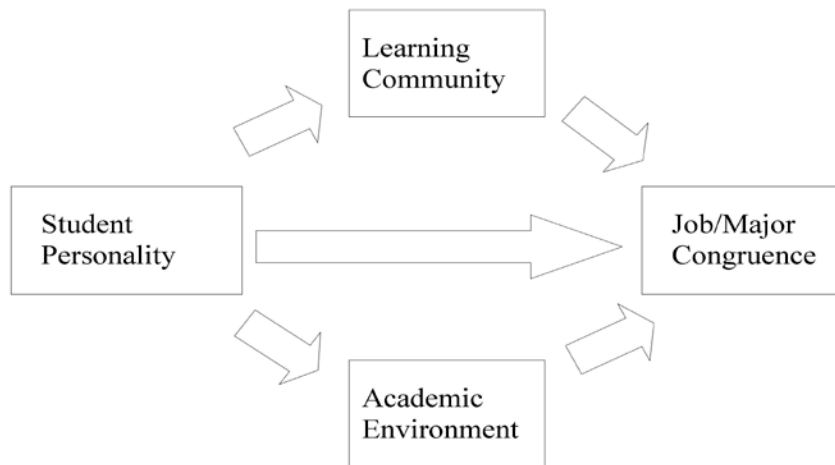
Figure 2: The Impact of Academic Environment on Job/Major Congruence

Three assumptions undergird my conceptual framework. First, students generally choose academic environments that match their personality types. This proposition is consistent with the findings of Smart, Feldman, and Ethington (2000) that students select majors that correspond to their interests and abilities. It is also consistent with Holland's (1997) contention that expressed choice has "strong predictive ability" (p. 156) of type. Thus, major is an acceptable measure of personality type because it represents "the embodiment of a college graduate's vocational preferences and competencies" (Cabrera, et al, 2008, p. 705). In fact, Elton and Rose (1970) found that student major choice is a substantially more predictive and efficient measure of type than administering and scoring a personality inventory to the student.

Second, I contend that learning communities represent distinct academic environments that have socialization effects upon student participants. Though Smart,

Feldman, and Ethington (2000) restrict their examination of academic environments to departments and majors, learning communities also socialize students by exposing them to disciplinary approaches, norms and perspectives. Moreover, research on discipline-based learning communities supports the notion that learning communities may be more effective at academic socialization than major alone (Barnett, et al, 2009; Mickelson, et al, 2007; Purdie, et al, 2007; Smith & Bath, 2006). This may be due to the fact that learning communities exhibit what Holland (1997) calls a high degree of identity. Environments with high identities offer clear and consistent direction and rewards, while those with diffuse identities offer conflicting and poorly defined goals. I propose that learning communities have high identities simply by the nature of their inherent structures and practices, whereas most academic majors have diffuse identities. Learning communities act as distinct academic environments, socializing students more intensely to a discipline than they might experience from their major alone.

Finally, I maintain that the interplay of personality and academic environment should result in the student achieving job/major congruence. Job/major congruence is a natural outcome variable for Holland's (1997) theory because it represents the intersection of both personality (i.e. major) and work environment (i.e. job). Moreover, research examining the relationship between life history and congruence (Claudy, 1973; Donohue, 2006; Oleski & Subich, 1996; Prediger & Swaney, 1986; Tracey & Robbins, 2005) suggests that academic environments represent an important opportunity for college students to explore a possible work environment through their studies (Grotevant, et al, 1986). This exploration should lead to a match between final major and first job upon graduation.

61

Of course, not all students will achieve job/major congruence. Finding employment after graduation is a complex process impacted by the economic realities of job availability (Cabrera, et al, 2008), the importance of social capital (Hu & Wolnaik, 2010), and the student's job search skills (Villar, Corominas, & Capell, 2000). Such challenges may result in college graduates obtaining jobs that do not line up with their personality or education. For example, in Kressel's (1990) study of congruence and job satisfaction for social science majors, one third of respondents noted that their jobs were not congruent with their major. That being said, the current study compares congruence for two groups of alumni: those who participated in learning communities and those who did not. The analysis is more concerned with whether those who participated in a learning community while in college are more likely to report job/major congruence compared to their non-participant peers.

In sum, I hypothesize that individuals who participate in learning communities are more likely to experience job/major congruence due to their participation in that program. As distinct academic environments, learning communities expose participants to specific curricular practices and structures that provide strong socialization towards a discipline. These experiences are above and beyond what an average student might experience through their major alone. In the next section, I outline the methodology that I utilized for exploring this hypothesis.

CHAPTER 3: METHOD

In this chapter, I discuss the methodology employed to examine the connection between learning communities and job/major congruence. As a concurrent embedded design, this mixed methods approach relies on a quantitative analysis to address the research question, while employing a qualitative approach to provide context and depth to the study. I begin with presenting the institutional setting as well as background information on the programs selected for inclusion in the study. In addition to this context, I provide a narrative of how I approached both program selection and the program director interviews. Next, I present descriptive information on the quantitative sample as well as the decisions I made on preparing the data for analysis. Finally, I offer an overview of logistic regression analysis to aid the reader in understanding the findings presented in Chapter 4.

As presented in the conceptual framework upon which this study is built, I hypothesized that students who participate in learning communities are more likely to achieve job/major congruence upon graduation due to the unique role these programs play in socializing students toward an academic discipline. This research examines congruence outcomes for alumni at a single institution who participated in learning communities as compared with alumni who did not participate in such programs. The research question the study seeks to answer is:

Are alumni who participated in a learning community program during

college more likely to achieve job/major congruence within one year of

graduation compared to their non-participant peers?

Study Design

The study employs a mixed methods approach relying primarily on a secondary

dataset from a single institution. I analyzed data from three administrations of an alumni

survey and matched these responses to student data in order to determine learning

community participation and student background characteristics. In addition, I conducted

informal, face-to-face interviews with learning community program directors to gather

specific data on each program. The survey, student, and interview data are utilized as

measures for the constructs found in my conceptual framework. I drew upon the

quantitative data to conduct a logistic regression analysis to address my research

question.

Mixed methods. The mixed methods approach that I use in this study is

considered a concurrent embedded design (Creswell, 2009). In this approach (see Figure

3) the researcher collects one form of data in order to provide support for his or her main

analysis. Accordingly, I relied on a qualitative form of data collection (i.e. interviews) to

provide insight into explaining my quantitative findings. Thus, the embedded design

allows me "to integrate the information and compare one data source with the other…

[to] provide an overall composite assessment of the problem" (Creswell, 2009, p. 214).

Relying on an embedded design has two clear advantages for this study. First, the data

from the interviews helps the researcher to illustrate the quantitative findings or add

"meat on the bones of 'dry' quantitative findings" (Bryman, 2006, p. 106). Second, the interviews provide additional insight into the process behind how learning communities work. As such, the study provides much-needed depth to the learning community literature.
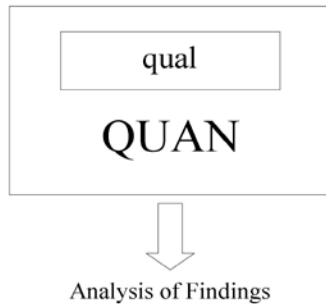
Figure 3: Concurrent Embedded Design. Adapted from Creswell (2003)

Institutional context. The current study institution is a public research university located on the east coast of the United States. A flagship institution for its state, it has an enrollment of over 30,000 students and offers over 100 undergraduate and graduate degrees. The university frequently ranks among the top 50 universities in the U.S. News & World Report rankings and is well-respected for many of its programs (U.S. News, 2011). Under the Carnegie Classification system, the university is categorized as being a large, four-year, primarily residential institution with selective admissions and a very high level of research activity (Carnegie Foundation for the Advancement of Teaching, 2010).

Learning communities. Learning communities are a hallmark of this campus and students compete to gain entrance into over 40 different programs offered by the institution. These specialized programs are designed to enhance the student experience and make a large research institution seem smaller (institutional documents, 2011). The campus offers a diverse array of learning community options for both first-year and older students; residents and commuters. Some programs have open enrollment whereas others have competitive admission. Program options range in size from cohorts of 10 students to those with over 250 students. The first learning community program at this institution began in 1987 and additional programs have been added over the last two decades. Students may enroll in a wide variety of learning communities including themed living communities, honors programs, and an assortment of disciplinary-focused learning communities.

Program selection criteria. Given both the focus of this study as well as the wide range of learning communities that exist at the institution, I opted to look primarily at communities with a disciplinary focus. Initial program selection was guided by Smith, MacGregor, Matthews, and Gabelnick's (2004) definition of learning communities: "curricular approaches that intentionally link or cluster two or more courses, often around an interdisciplinary theme or problem, and enroll a common cohort of students" (p. 20). Using that definition as a guide, I examined the websites of each learning community program at the institution. In all cases, the learning communities I selected for inclusion of the study exceeded the bar set by the definition presented above.

I utilized three criteria when reviewing the learning community programs. First, I opted to include only those programs that have curricular requirements and provide students a transcript notation for completing the program. Utilizing only those learning communities that have curricular requirements guarantees that the alumni included in the sample have fully completed the program to which they are connected. Those participants who failed to meet curricular requirements or who dropped out of a particular program would not appear in the sample since they would never receive a notation on their transcript indicating completion. In all cases, the program websites were very clear on curricular requirements and whether students received a transcript notation for completing the program

Second, I looked for programs that tended to rely on active and collaborative learning in the classroom. Not only do these pedagogical approaches most often appear in the learning community literature (Smith, et al, 2004), but prior research demonstrates that these approaches effectively expose students to disciplinary skills and knowledge (Smith & Bath, 2006). While reviewing program websites, I examined the mission and educational goals of each program as well as any references to classroom learning and pedagogy. Many of the programs specifically cited using active learning pedagogy or solving real-world problems in the classroom. Others implied this approach through their mission or via descriptions of student projects.

Finally, I attempted to create breadth and balance in the programs I selected. My primary concern was that the findings of the study would be too limited if the selected programs did not draw from a variety of disciplines. In other words, if the learning

communities selected for the study drew mostly from professional disciplines such as business or engineering, the applicability to other majors would be reduced. Thus, as I reviewed the program websites, I noted the disciplinary focus or theme of each program as well as which majors were eligible for participation.

Utilizing the three criteria outlined above, I initially selected seventeen learning communities to include in the study. I next contacted each learning community program director and requested their participation in the study. One program director declined to participate resulting in a final list of sixteen programs to include in the study. The programs range in cohort size from 25 to 200 students and represent a wide variety of disciplines. Fourteen of the programs take two years to complete while the remaining programs take three and four years respectively. All programs have competitive admissions and students are selected based on academic performance, writing samples, or some other evaluative criteria. Each program is led by a faculty director who teaches or coordinates the academic courses associated with the program. Additional descriptive attributes of the programs included in the study are presented in the next chapter.

Interviewee selection. I made some decisions in regard to selecting my interviewees. Given that my quantitative data are drawn from alumni who graduated in 2001, 2004, and 2008, the faculty directors of each program needed to be in place between 1999 and 2008 to capture each student cohort involved in the study. In many cases, the programs had multiple directors over the decade of interest. In these instances, I selected the individual who served the longest period as the director during the time span of my study. In one case, I interviewed the current director of the program despite

the fact that he had only been involved with the program for two years due to the fact that

the previous director was not available for interview. Additionally, I asked each

interviewee to remark on changes to the program over time as well as their familiarity

with the history of the program during the time span of my study. All interviewees had

strong familiarity with the history of their programs and very few changes had occurred

during the time span of the study.

    Program director interviews. To ensure that each program met the criteria

outlined above, I conducted informal, face-to-face interviews with program directors of

the targeted programs. In addition to confirming that the programs fit within the study,

these interviews provided greater context for each learning community. I posed questions

designed to examine the disciplinary focus of each program as well as provide specific

examples of pedagogical practices utilized in each learning community. Moreover, I

asked the program directors to describe specific structures and approaches they relied

upon to achieve their mission regarding staffing, student contact, and funding.

    Interviews were semi-structured with defined questions and potential follow-ups

(see Appendix A for a copy of the interview protocol). A semi-structured design allows

the researcher to create a standardized approach for interviews while maintaining enough

flexibility to pursue an interviewee's responses for depth and clarity (Fortado, 1990;

Lodico, Spaulding, & Voegtle, 2006). During the interviews, I followed the general

structure of the protocol while occasionally stopping to ask clarifying questions. All

sixteen interviews were conducted face-to-face in faculty director offices. Responses

from the interviews were recorded and compared to ensure viability for the study and to identify themes that might shed light on my quantitative findings.

Interview responses indicated that the sixteen programs that I had initially selected were a good fit for the study. Each learning community has curricular requirements to track a student's progress through the program. Second, the programs represent multiple disciplines from throughout the university. The learning communities span four out of the six personality types represented by Holland's theory (i.e. Investigative, Artistic, Social, and Enterprising). Finally, each program relies on active learning pedagogies in the classroom that expose students to the skills and knowledge most associated with a particular program's disciplinary focus. (Appendix B provides more detail on all the learning communities included in this study). Given that the learning community programs met the criteria described above, I was confident that although students in the programs had disparate experiences, the overall impact was similar enough to allow me to combine programs to determine learning community participation (see Variables section below).

Survey data. Every three years the Office of Institutional Research at the study institution surveys alumni who have graduated in the prior year. This survey, administered by the study institution since 1985, asks alumni about their experiences at the institution as well as their viewpoints on a variety of matters. One portion of the survey focuses on post-graduation employment. Respondents are asked to provide their current employment status and to rate the degree of job/major congruence they have achieved. This measure serves as my dependent variable for the study. In addition to the

alumni survey, I utilized institutional data to determine whether respondents participated in a specific learning community program while at the university and to determine Holland personality type and control for various background characteristics for each respondent.

The survey is administered online to undergraduate alumni who have graduated in the past twelve months. Per administration, the response rate for the survey ranges from about 10 to 15% (institutional documents, 2011). For example, the 2008 administration of the survey was sent to 5,815 degree recipients and had 738 respondents for a response rate of 12.6%. According to the Office for Institutional Research at the study institution, each administration of the survey tends to have a slight overrepresentation of White and female students (institutional documents, 2011). In addition, the samples tend to be slightly overrepresented with students who enter as Freshman, in contrast with those who transfer into the institution later. The sample matched the population in terms of residency (i.e. in-state or out-of-state). I requested additional information from the Office of Institutional Research regarding the generalizability of the sample to the alumni population as a whole. However, the office only examines four characteristics when conducting such analyses: race, gender, entry status, and residency.

I utilized data from the last three administrations of this survey (i.e. 2008, 2005, and 2002). I selected these three cohorts based on the learning communities that were selected for inclusion in the study. All sixteen programs were in existence between 1998 and 2007 and, therefore, had potential alumni respondents in each administration of the survey. The 2002 cohort (n = 1,223), 2005 cohort (n = 716), and 2008 cohort (n = 738)

were then combined into an initial sample of over 3,000 respondents (n = 3,196).

Additional data decisions, detailed below, reduced the final analytic sample to just over

2,100 respondents (n = 2,192). As a single institution study, the results can only be

generalized to the campus being examined. Thus, my population of interest is

undergraduate alumni of that single campus.

Variables & Measures

The current study relies upon the conceptual framework detailed earlier.

Holland's (1997) constructs of personality, environment, and congruence are the

foundation for this study. This section describes the variables included in the study (see

Table 2 for a list of study variables) as well as supporting literature for why each variable

was selected.

Table 2

Dependent and Independent Variables

Variable		Overall Sample (n = 2677)	2002 Cohort (n = 1223)	2005 Cohort (n = 716)	2008 Cohort (n = 738)
Congruence	Directly related	43.4%	44.0%	46.2%	44.4%
	Somewhat related	32.4%	32.0%	30.2%	33.3%
	Not related, but unimportant	12.7%	13.2%	11.0%	11.8%

	Not related, but important	11.5%	10.5%	12.6%	10.4%
Gender	Female	58.1%	57.7%	59.1%	57.6%
	Male	41.9%	42.3%	40.9%	42.4%
Minority Status	Minority	21.7%	21.7%	20.8%	22.9%
	White/Asian	78.3%	78.3%	79.2%	77.1%
Mean SAT Score		1220	1182	1232	1256
Undecided at Entry	Yes	36.9%	35.1%	32.7%	44.2%
	No	63.1%	64.9%	67.3%	55.8%
Holland Type	Realistic	3.3%	3.5%	3.2%	3.1%
	Investigative	42.6%	46.9%	46.6%	44.6%
	Artistic	12.1%	11.8%	12.0%	12.9%
	Social	11.7%	13.2%	10.6%	10.3%
	Enterprising	23.8%	21.4%	25.3%	26.2%
	Conventional	2.9%	3.2%	2.2%	3.0%
Learning Community	Yes	12.1%	8.3%	13.1%	17.5%
	No	87.9%	91.7%	86.9%	82.5%

Job/major congruence. The dependent variable for this analysis, job/major congruence, measures whether a respondent views his or her current job as related to his or her major upon graduation. Previous literature supports the use of this variable within the framework of Holland's theory (Elton & Smart, 1988; Fricko & Beehr, 1992; Smart, Elton, & McLaughlin, 1986; Wolniak & Pascarella, 2005). Moreover, Cabrera, deVries, and Anderson (2008) demonstrate that subjective measures of congruence are an

acceptable proxy for objective measures. Job/major congruence is taken from a question that asks respondents to rate the extent to which their current job is related to their major upon graduation. Selecting only those individuals from the sample who provided a response to this question reduced my sample size to just over 2,600 individuals (n = 2,677). Respondents could choose from four options: *directly related (43.4% of respondents in the overall sample); somewhat related (32.4%); not related, but not important to me (12.7%);* and *not related, but I would like a job related to my major (11.5%).*

Participation in a learning community. The primary independent variable of interest is participation in a learning community. This is a binary response variable (1 = Yes, 0 = No). All respondents for the alumni survey were checked for participation during their college experience. If the respondent completed the requirements associated with any of the sixteen targeted programs, he or she was classified as a "Yes" for this analysis. As described above in reference to the program director interviews, the sixteen targeted programs shared many similarities even though they differed in terms of scope and disciplinary focus. Additionally, given that students at the study institution are not restricted from pursuing only one learning community program, there were a small number of students (i.e. less than 10) who had participated in two programs during their college experience. In such cases, the program of longer duration was selected. This decision is consistent with Smart, Feldman, and Ethington's (2000) findings that academic socialization occurs over time and with life history research that congruence increases over time (Claudy, 1973; Donohue, 2006; Oleski & Subich, 1996; Prediger &

Swaney, 1986; Tracey & Robbins, 2005). Learning community participants numbered above 300 (n = 325) representing 12.1% of the overall sample.

Holland type. Although Holland type broadly describes work preferences and environments, it is a useful tool for classifying academic majors (Smart, et al, 2000). Holland type was measured by accessing student records for major upon graduation. Each student's major was then converted to single-letter Holland type using the "College Majors Finder" (Rosen, Holmberg, & Holland, 1989). Using major upon graduation as a proxy for personality is supported by Cabrera, deVries, and Anderson's (2008) contention that major is "the embodiment of a college graduate's vocational preferences and competencies" (p. 705) and is consistent with research on job/major congruence (Cabrera, et al, 2008; Elton & Smart, 1988; Fricko & Beehr, 1992; Smart, et al, 1986; Wolniak & Pascarella, 2005). Respondents represented all six Holland types (see Table 2) with the largest majority consisting of Investigative personalities (42.6%). The Investigative type comprises a wide variety of majors including engineering, science, and medical careers.

Combined SAT score. For all respondents, student records were utilized to pull SAT scores (math and verbal combined). In the learning community literature SAT scores are regularly used as controls to ensure that learning community participants do not differ substantially from their non-participant peers in regard to academic ability (see Hotchkiss, Moore, & Pitts, 2006; Inkelas, Soldner, Longergeam & Leonard, 2007; Purdie, Williams & Ellersieck, 2007; Stassen, 2003). SAT scores in the sample range from 690 to 1600 with a mean score of 1220. The SAT score variable is normally

distributed with skewness of -0.27 (SE = 0.05) and kurtosis of -0.05 (SE = 0.11). About 600 individuals (n = 609) were missing SAT score from the overall sample. In the missing data section below, I address how I handled this challenge.

Demographic characteristics. I also controlled for race and gender in my study to account for Holland's (1997) "other things being equal" (p. 13) clause which recognizes that societal constraints shape educational and career choices. Race and gender are regularly controlled for in studies utilizing Holland (see Allen & Robbins, 2010; Ishitani, 2010; Oleski & Subbich, 1996; Tracey & Robbins, 2005; Wolniak & Pascarella, 2005). Gender is a dichotomous variable (Female = 1). Females comprise fifty-eight percent (58.1%) of the overall sample while males comprise the remainder (41.9%). I opted to split race into a dichotomous variable (Minority = 1) given that the focus of this study does not directly examine the impact that learning communities have on race. The minority category (21.7% of the overall sample) includes those groups that are traditionally underrepresented in higher education: Hispanic, African-American, and Native American students, as well as non-U.S. citizens (i.e. foreign students). Asian-American and Caucasian students comprise the remainder (78.3%).

Undecided status. A little over one-third of the sample (36.9%) entered the university without a declared major. In general, previous research focusing on congruence between major and personality (see Allen & Robbins, 2010; Schaefers, Epperson, & Nauta, 1997) excludes undeclared/undecided students. While this decision may be justifiable, I was not willing to sacrifice a large portion of the sample especially given the possibility that this group may provide unique insights into the role that

learning communities play in socializing students toward a discipline. Undecided is a

dichotomous variable (1 = undecided).

Survey cohort. I employed a series of dummy variables to control for any cohort

differences that might exist between the three administrations of the survey. Given that

the institution administers the survey every three years, there could be differences in

employment opportunities due to changes in the economy or job market and this variable

attempts to account for those differences. This decision is consistent with Cabrera,

deVries, and Anderson's (2008) study of the connection between job/major congruence

and satisfaction. More respondents completed the survey in 2002 (45.7%) than in 2005

(26.7%) or 2008 (27.6%). Despite this fact, the 2002 cohort was comparable to the

remaining cohorts in regard to the control variables. An ANOVA indicated that the

groups did not vary significantly in regard to SAT score ($F = 0.098$, $p = -0.907$).

Additionally, Chi-Square analyses indicated that the groups were similar in regard to

gender ($\chi^2 = 0.428$, $p = 0.807$), race ($\chi^2 = 0.948$, $p = 0.623$), and personality type ($\chi^2 =

12.28$, $p = 0.267$). In regard to learning community participation, the cohort groups

differed somewhat ($\chi^2 = 36.938$, $p < 0.001$). Learning community participants were less

likely to be found in the 2002 cohort and more likely to be found in the 2008 cohort (see

Table 3).

Table 3

Crosstabulation of Learning Community Participation and Survey Cohort

			LC Participation		
			No	Yes	Total
Cohort	2002	Count	1121	102	1223
		% within LC Participation	47.7%	31.4%	45.7%
	2005	Count	622	94	716
		% within LC Participation	26.4%	28.9%	26.7%
	2008	Count	609	129	738
		% within LC Participation	25.9%	39.7%	27.6%

Data Screening

Before performing a logistic regression analysis, I made a number of data
decisions to ensure that the data were utilized fully and appropriately for my research
question. I removed some respondents from the sample due to low proportions for certain
categories. In addition, I imputed data for one variable that had a number of missing
responses. All data decisions were supported by the existing literature.

Exclusions. As described above, the dependent variable for this study is
comprised of four response categories: *directly related (43.4% of respondents in the*

overall sample); somewhat related (32.4%); not related, but not important to me

(12.7%); and *not related, but I would like a job related to my major (11.5%).* I had

concerns about the third category (not related, but not important to me) due to the fact

that it is hard to interpret the rationale behind why someone might select this response. It

is impossible for the researcher to fully understand why congruence may not be important

to an individual. Moreover, most previous research on job/major congruence (see

Cabrera, et al, 2008; Elton & Smart, 1988; Fricko & Beehr, 1992; Smart, Elton, &

McLaughlin, 1986; Wolniak & Pascarella, 2005) treats this variable dichotomously (i.e.

either individuals achieve congruence or not) or as a Likert scale (i.e. an ordinal scale of

increasing levels of congruence).

Examining this response item in more detail generated additional concerns.

Though individuals who selected this response were generally representative of the

overall sample, students who were undecided at entry were slightly overrepresented in

this category. The relationship between undecided status and the "not related, but not

important to me" response option was significant ($\chi^2 = 27.35$, $p < 0.001$). Moreover, I

conducted a preliminary analysis on this response item by regressing the study variables

on individuals who selected this option. This analysis revealed insignificant relationships

between the response option and all of the independent variables with the exception of

undecided students. Undecided students were slightly more likely to select the "not

related, but not important to me" response in comparison to the other three options (B =

0.632, $p < 0.001$).

Given this preliminary analysis, my concerns over interpretation of this item, and the fact that the response options were not consistent with the literature, I opted to remove these respondents and treat my dependent variable as dichotomous. This reduced my sample size by 12.7%, but created a simple binary outcome for my regression analysis that was more consistent with prior research on job/major congruence. In the final analytic sample, the vast majority of respondents indicated congruence (86.8%) while those indicating no congruence comprised the remainder (13.2%)

The overall sample contained individuals from each Holland type (see Table 2). However, the Conventional (2.9%) and Realistic types (3.3%) were underrepresented in the sample. Due to the low number of respondents in these groups, I decided to eliminate these individuals from the final analytic sample. Smart, Feldman, and Ethington (2000) made a similar data decision based on low numbers for these two types in their study of academic environments. In fact, academic majors in these two Holland types are few and far between at four-year colleges and universities (Smart, et al, 2000). Many Realistic and Conventional majors are found in two-year degree and certificate programs. As such, the rest of my analysis focuses on the dominant types that were exhibited in the sample: Investigative, Artistic, Social, and Enterprising. This decision reduced my analytic sample to just over 2,100 individuals (n = 2,192).

Missing data. Data was available for all variables in the study with the exception of SAT score. A little over 600 individuals (n = 609) did not have a reported SAT score, which accounted for just over a quarter (27.7%) of the analytic sample. I conducted a missing data analysis to determine if these individuals differed substantially from the

larger sample. Chi-square analyses indicated that those missing data did not significantly

differ from the analytic sample in regard to gender ($\chi^2 = 1.716$, $p = 0.19$). However, those

missing SAT scores were more likely to be from an underrepresented group ($\chi^2 = 54.996$,

$p < 0.001$) and undecided at entry ($\chi^2 = 21.658$, $p < 0.001$) and much less likely to

participate in a learning community ($\chi^2 = 92.845$, $p < 0.001$). These differences are

summarized in Tables 4, 5, and 6 below.

Table 4

Crosstabulation of Undecided Status and Missing SAT

			Undecided at Entry		
			No	Yes	Total
Missing SAT	No	Count	1214	587	1801
		% within Undecided	79.7%	71.2%	76.7%
	Yes	Count	310	238	548
		% within Undecided	20.3%	28.8%	23.3%

Table 5

Crosstabulation Minority Status and Missing SAT

			Minority		
			No	Yes	Total
Missing SAT	No	Count	1464	337	1801
		% within Minority	79.9%	65.3%	76.7%
	Yes	Count	369	179	548
		% within Minority	20.1%	34.7%	23.3%

Table 6

Crosstabulation of Learning Community Participation and Missing SAT

			LC Participation		
			No	Yes	Total
Missing SAT	No	Count	1518	283	1801
		% within LC Participation	73.5%	99.3%	76.7%
	Yes	Count	546	2	548
		% within LC Participation	26.5%	0.7%	23.3%

In regard to the primary independent variable assessed in this study, these differences may be due to the fact that transfer students are not required by the university to submit SAT scores for admittance and transfer students are rarely eligible to participate in the learning community programs offered at the institution.

In order to maintain an effective sample size, I chose to impute SAT scores for those who were missing this data point. First, I determined the mean SAT score for the sample for each academic major included in the study. For each individual who was missing an SAT score, I reviewed their selected major and imputed the mean SAT score for that major. In a few cases, fewer than two individuals for a given major were present in the sample. In these instances, I imputed the overall mean for the sample (   ).

Analytical Approach

To address my research question examining the relationship between learning community participation and job/major congruence, I employed a logistic regression analysis[1]. Logistic regression is the appropriate approach because the dependent variable is a binary outcome (Cohen, Cohen, West, & Aiken, 2003). In addition, logistic regression analysis allows the researcher to examine the strength and direction of a relationship between a variable of interest and the dependent variable while controlling for other factors. Thus, the technique not only demonstrates if there is a significant relationship between learning community participation and job/major congruence, but

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[1] Initially, I considered addressing the research question using multinomial regression given that I had three distinct categories of congruence. However, while conducting preliminary analyses, I found that the model would not converge. This was most likely due to the small cell sizes attached to having multiple independent variables for each category in the analysis. Given the instability of the model, I opted to pursue a logistic regression analysis using a dichotomous outcome.

also indicates whether that relationship exists when other factors are held constant. For example, I can draw conclusions about the impact of learning community participation on job/major congruence regardless of student background characteristics such as race or gender.

Additionally, logistic regression analysis allows the researcher to draw conclusions on how probable it is that an individual will achieve an outcome based on a given set of characteristics (Pampel, 2000). This is because logistic regression is based on a binary outcome: either the individual achieves job/major congruence or does not. The results of this logistic regression analysis, therefore, present the likelihood of achieving job/major congruence for the individuals in the sample. Certain characteristics, represented by the independent variables in the study, may improve one's chances of achieving job/major congruence. Other characteristics may diminish one's chances of achieving the outcome. The impact of each variable on the dependent variable can be examined separately while controlling for the other factors or in combinations such as the likelihood of achieving job/major congruence for a minority student who participates in a learning community. However, interpreting the results can be confusing to one not familiar with logistic regression.

Interpretation. Unlike linear or ordinary least squares regression, logistic regression does not present simple coefficients with direct effects on the outcome variable. This is because logistic regression is built upon a binary outcome variable which, by its nature, is not linear. Rather than a straight line, the outcome may be thought of as an S-shaped curve representing the likelihood of achieving said outcome. As noted

earlier, the outcome is either present or not, and various characteristics either improve or diminish the chances of meeting the outcome. Thus, logistic regression involves "linearizing non-linear relationships" (Pampel, 2000, p. 18) and presents the coefficients in terms of changes to the chances of a particular outcome being achieved.

The standard logistic regression output presents the coefficients for each variable in terms of the logged odds (B). The logged odds are rather simple to interpret because they act in ways similar to OLS regression. For each variable, the logged odds indicate the strength and direction of the relationship. Positive numbers increase the chances of the outcome variable being met, while negative numbers decrease the chances. Larger numbers have a greater impact on the outcome variable, while smaller numbers have a lesser impact. Moreover, the logged odds are additive in nature and can be used to predict the impact that certain characteristics have on the dependent variable. For example, by combining the logged odds I can explore how a minority student who participated in a learning community might fare in regard to job/major congruence in comparison to his or her non-participant peers. This is useful for comparison purposes, but the logged odds are not readily intuitive for addressing a research question. One rarely thinks about outcomes in terms of the logged odds.

As such, in presenting the findings below, I translated the effects of each significant coefficient into marginal probabilities as outlined by Pampel (2000). In terms of the outcome variable, this provides for a much simpler interpretation of the findings. I report how each significant variable increases or decreases the probability of achieving job/major congruence. To do so, I first computed the probability of achieving job/major congruence for the omitted group in the regression model (i.e. those individuals with

average SAT scores and null terms for each dummy-variable). I then calculated the

probability for the group of interest I was examining (e.g. those individuals who represent

the null or omitted group, plus learning community participation). Finally, I calculated

the difference between those two probabilities. This final marginal probability indicates

the increase or decrease in probability of achieving job/major congruence based on the

variable of interest (i.e. variable X increases one's chances of achieving job/major

congruence by Y percent).

Viability for regression. When conducting a regression analysis, it is essential to

ensure that the data are appropriate for inclusion in the model (Cohen, et al, 2003).

Logistic regression requires a sufficient ratio of cases to predictor variables. Hosmer and

Lemeshow (2000) recommend having at least 50 observations for each independent

variable. This study relies on seven independent variables, which would require a sample

size above 350. The analytic sample for this study has over 2,100 respondents (n =

2,192). Outliers are another cause for concern when conducting logistic regresion.

However, this study relies on only one continuous variable, SAT scores, which is

normally distributed and has no outliers.

In order to ensure appropriate power for the analysis, I attempted to keep the total

number of cells in the analysis low. Whenever possible, categorical variables were

dichotomized rather than entered as a series of dummy-coded variables. Finally, my

major concern was the presence of multicollinearity between the independent variables.

An initial bivariate correlation indicated no need for concern with correlations 0.138 or

below (see Table 7). In addition, all variables were assessed for multicollinearity by

examining variance inflation factors (VIFs). A VIF of "ten or more provides evidence of serious multicollinearity" (Cohen, et al, 2003, p. 423). Table 8 demonstrates that the independent variables are well within normal range and appropriate for regression analyses.

Table 7

Correlations among study variables

	Gender	Minority Status	SAT Score	Undecided	Holland Type	Cohort	Learning Community Participation
Gender	---						
Minority Status	0.066**	---					
SAT Score	-0.023	-0.043*	---				
Undecided	0.071**	0.013	0.025	---			
Holland Type	0.138**	-0.042	0.000	0.134**	---		
Cohort	0.08	-0.024	0.058**	-0.001	0.042*	---	
Learning Community Participation	0.051*	-0.042	0.018	-0.089**	0.017	0.044*	---

* Significant at .05 level, ** Significant at .01 level, *** Significant at .001 level

Table 8

Collinearity statistics for study variables

	Tolerance	VIF
Gender	0.918	1.089
Minority Status	0.988	1.012
SAT	0.995	1.005
2002 Cohort	0.848	1.179
2005 Cohort	0.838	1.194
Undecided at Entry	0.957	1.045
Holland Type Artistic	0.889	1.125
Holland Type Social	0.853	1.172
Holland Type Enterprising	0.856	1.168
Learning Community Participation	0.965	1.037

Procedure. Variables were entered into the model simultaneously as controls. The cohort variable was entered as series of dummy-coded variables with the 2002 cohort serving as the referent group. Holland type was also entered as a series of dummy-coded variables with Investigative serving as the referent group. Thus, the null individual for the model is a non-minority male with an average SAT score from the 2002 cohort group who had a major upon entry to the university, exhibited an Investigative Holland personality type, and did not participate in a learning community at the institution.

Summary

In order to examine the relationship between learning community participation and job/major congruence, I analyzed data from two major sources: an existing alumni

survey and institutional data that captured background characteristics. In addition, I conducted a series of interviews with learning community program directors to ensure that each program met the conditions of the study and were comparable in scope and focus. These interviews also provided unique insights that might explain my research findings. I made a number of decisions on how to best utilize the data in my analysis. In some cases respondents were excluded and in some cases data points were imputed. These decisions were driven by the literature as well as keeping the focus on my research question. My primary concern with the independent variables had to do with multicollinearity. A correlation matrix and examination of variance inflation factors (VIFs) indicated that severe multicollinearity is not an issue with the data and that it is appropriate for regression. In the next chapter I present the findings of my logistic regression analysis as well as explain the findings in terms of the impact that learning communities have on individuals achieving job/major congruence.

CHAPTER 4: RESULTS

In this chapter, I present both the qualitative and quantitative findings of my study. First, I begin with a summary of the program director interviews to provide context for the learning community programs included in the study. In addition to describing the learning communities in greater detail, this section also highlights the structures and approaches utilized in each program. Second, I present the quantitative findings which serve to directly address my research question. I begin with a profile of the analytic sample presenting descriptive statistics for each variable. Then, I offer a picture of the overall relationship between congruence and each variable paying particular attention to learning community participation. Finally, I present the findings of the logistic regression analysis and interpret the relationships in terms of marginal probabilities. As a concurrent embedded mixed methods design, the quantitative analysis takes precedent over the qualitative procedure in addressing the research question; the qualitative findings may shed additional light on the quantitative findings. As such, additional exploration of the qualitative findings is presented in the discussion section.

Qualitative Findings

As noted in Chapter 3, the sixteen learning community programs selected for this study met three criteria. Each program has a disciplinary focus, curricular requirements, and relies on active learning techniques in the classroom. Moreover, the programs span a variety of disciplines from across the institution. Table 9 below presents the descriptive characteristics of the sixteen learning communities in the study. Most of the programs in

the study are geared toward first-year students and last for two years or four semesters. All but one of the learning communities has a residential component. Of those residential-based programs, only one requires participants to live on-campus; the rest allow commuters to enroll. Cohort sizes of the programs range from 25 to 200 students with a median cohort size of 70 students. All programs in the study make use of co-curricular activities outside the classroom designed to integrate classroom learning and build a sense of community among participants. Finally, the programs represent four out of the six Holland types (Investigative, Artistic, Enterprising, and Social) found in this study.

Table 9

Descriptive Characteristics of the Learning Communities

Disciplinary Focus	# of Courses Required	Enter as	Residential*	Cohort Size	Co-Curricular Activites	Holland Type
American Studies	4	Freshman	Yes	60	Yes	S
Arts	4	Freshman	Yes	70	Yes	A
Astronomy	4	Freshman	Yes	70	Yes	I
Biology	4	Freshman	Yes	90	Yes	I
Business	4	Freshman	Yes	70	Yes	E
Creative Writing	4	Junior	Yes**	25	Yes	A
Earth Science	4	Freshman	Yes	70	Yes	I
Education/Human Development	4	Freshman	Yes	80	Yes	S
Engineering	4	Freshman	Yes	70	Yes	I
Environmental Science	4	Freshman	Yes	60	Yes	I

Humanities	4	Freshman	Yes	50	Yes	A
International Studies	4	Freshman	Yes	65	Yes	S
Leadership	4	Freshman	Yes	70	Yes	E
Media Studies/Journalism	4	Freshman	Yes	70	Yes	A
Research Methods	10	Freshman	Yes***	200	Yes	I
Systems Engineering	10	Sophomore	No	65	Yes	I

* Unless otherwise noted, students are encouraged but not required to live in learning community

** Participants are required to live in learning
community

*** Participants are required to live in learning community for first year only

Compared to their experience prior to becoming a program director

Disciplinary focus. The disciplinary focus of each learning community included in this study represents a broad spectrum of academic majors. Nine of the programs have a distinct disciplinary focus such as biology or journalism. Five of the programs are multidisciplinary in nature: American Studies, Education/Human Development, Humanities, International Studies, and Systems Engineering. These programs draw concepts and approaches from multiple academic areas. For example, the Humanities program includes courses in History, Philosophy, Literature, and Visual Arts. The Systems Engineering program combines elements of both business and engineering. Though, when pressed to put the program within one discipline, the faculty director conceded that the program is more closely aligned with engineering. Despite the fact that many of the programs cover multiple disciplines, each learning community has distinct career paths related to the focus of the program.

Two of the learning communities in the study are not generally considered to be distinct disciplines. However, the program directors that I spoke with were resolute that their programs did represent distinct disciplines with unique skills and knowledge particular to that field. For example, the director of the Leadership program made a strong case for why leadership could be considered a discipline with specific skills, approaches, and knowledge necessary to succeed as a leader. The Research Methods program also spans a number of areas and would not be considered a discipline by most academics. The faculty director of the program, however, was able to articulate specific skills and knowledge that are necessary for success in a research-based career. Moreover, as learning community programs, their overall goal is to introduce students to their focus and impart associated skills and knowledge related to that topic. The student's experience

in the learning community may affect ultimate major choice and career pursuits. Thus, a student who participates in the Research Methods program may ultimately select a major and career that relies on the skills and knowledge he or she built within the learning community. Finally, within the constructs of Holland's (2000) theory each of these programs can be classified as representing distinct academic environments. The Research Methods program clearly inhabits the norms one would associate with the Investigative environment. Students are taught skills associated with observation, investigation, and analysis. The Leadership program engages students in enterprising behaviors; participants learn about influencing, persuading, and leading other people. As such, these programs may be thought of as distinct academic environments within Holland's theory.

Disciplinary skills and knowledge. Each learning community conveys skills and knowledge related to the disciplinary focus of the program. After speaking about whether the program had roots in a particular discipline, I asked the faculty directors to describe the skills and knowledge that are essential to success in that field. In some cases the responses were unique to that program and in other cases the responses spanned multiple programs. Eight out of the sixteen program directors cited critical thinking or critical analysis as essential skills for their field. For example, the director of the Media studies program stated:

> Teaching students to be critical of all kinds of institutions is part of our mission. Not just the media, but of government and corporations as well. We use the media as a lens for examining how information is conveyed and then students are asked to analyze both the overt and covert messages communicated by that information.

Journalists must be critical thinkers in order to be objective and find the "truth" in a story.

Similarly, many directors mentioned that communication skills, whether oral or in writing, were essential skills for disciplinary success. The Business program director noted that "in order to succeed in business, you have to be able to present your ideas in staff meetings to your peers and bosses."

How a program instills disciplinary knowledge and skills in participants often derives directly on the skill being taught. For example, the faculty director for the Astronomy program noted that he hoped students would gain a "healthy dose of skepticism" with which to view scientific data and research. He believed that astronomers must be productive consumers of research who can view results with a critical eye. When asked how his program imparted this skill, he responded:

One of the exercises we assign is the Forer personality test which is a bogus test that gives everyone who takes it a broad description of their personality. The trick is everyone gets the same description. So after the students take the test, they are all excited about their results; [they think] "this describes me exactly." And then I tell them they all have the same description and watch their jaws drop. It is a great exercise in teaching them to be skeptical, to not just blindly accept conclusions which are presented to them. Then we spend the rest of the class diving into thinking about things critically.

Thus, students in the Astronomy program are exposed to a skill which is deemed essential by the director for success in the field. All of the other programs shared similar descriptions of both skills and how they achieved them through classroom content and

activities. Table 10 below presents a summary of the disciplinary knowledge and skills

focused on by each learning community

Table 10

Summary of the Learning Communities' Disciplinary Focus and Techniques

Disciplinary Focus	Disciplinary Skills/Knowledge	Active Learning Techniques
American studies	Critical thinking Observation and analysis	Discussion Reflective writing Service learning
Arts	Collaboration Communication skills	Team projects Peer teaching Reflective writing
Astronomy	Critical reasoning Analytic thinking Scientific vocabulary	Team projects Reflective writing Debate Simulations
Biology	Writing Public speaking Scientific process	Team projects Labs Discussion
Business	Teamwork Communication Leadership	Case studies Simulations Team projects Self-assessment
Creative writing	Avoiding abstractions Genre elements Reading as a writer Publishing process	Writers' workshop process Reflection Discussion Peer feedback
Earth science	Communication Critical thinking Interpreting data and charts	Labs Case studies Reflective writing Team projects
Education/Human Development	Child development	Team projects Service learning Discussion Reflective writing
Engineering	Critical reasoning Analytic thinking Communication skills	Team projects Discussion
Environmental science	Writing skills	Case studies

	Presentation skills	Reflective writing
		Discussion
Humanities	Analytical reading	Discussion
	Critical analysis	Reflective writing
International studies	Critical analysis	Team projects
	Communication skills	Discussion
Leadership	Social intelligence	Simulations
	Emotional intelligence	Case studies
Media studies/journalism	Critical analysis	Team projects
	Writing skills	Discussion
	Media theory	
Research methods	Research process	Team projects
	Critical thinking	Reflective writing
	Communication skills	Simulations
	Self-learners	Role playing
		Discussion
Systems engineering	Listening	Case studies
	Teamwork	Team projects
	Communication	Reflective writing
	Knowledge acquisition	Discussion
		Simulations

Active learning. In addition to the disciplinary focus of each program, the

learning communities in this study employ a variety of active learning techniques to

enhance student learning (see Table 10 above). These active techniques appear in

multiple facets of each program. All of the learning communities incorporate some

degree of active pedagogy within the classroom. Students participate in activities such as:

small group discussion, case studies, reflective writing, debate, self-assessment, and

simulations. These types of activities appear frequently over the course of the semester

and many faculty directors noted that some active component is incorporated within each

class meeting. For example, the director of the Business program utilizes active

approaches in class "every week. Generally, only about fifteen to twenty minutes of each

class period is spent lecturing. The rest of the time the students are engaged in small group discussions, analyzing case studies, or presenting material to one another." Moreover, all of the programs in the study require students to participate in co-curricular activities designed to enhance classroom learning and build community. The Education/Human Development program partners with a local elementary school. Multiple times a semester, the learning community participants visit the school to tutor and interact with the children. The director notes that participants "built strong relationships with the students they tutored. And it wasn't just community service, [because] it gave the [learning community] students the chance to be in a classroom environment, teaching others."

Three of the programs incorporate action learning projects whereby students apply the knowledge and skills that they have learned over the course of their participation in the program to a culminating project. Students in the Humanities learning community develop a research study addressing a topic within the humanities that interests them. These projects require considerable research and analysis and can take the form of a paper, documentary film, or even an art exhibition. The Systems Engineering program requires students to serve as consultants for businesses and organizations. A team of students solves a real-world problem by utilizing the skills they have learned in the program and presenting their solution to key decision-makers within the organization. The director of this program explains that the consulting projects give:

> students the chance to define their own problems and solutions. They begin to
>
> realize that faculty [members] don't have all the answers; that mistakes are part of
>
> the process and can help guide their learning. They begin to see faculty

[members] more as mentors or guides who can offer feedback or direction, rather than the answer to the problem.

Students in the Research Methods program work closely with a faculty mentor in researching a topic of their choice. The outcome of the research project often culminates in published papers or presentations at national conferences co-authored with their faculty mentor. As described by the faculty director of this program, "we expect students to become experts on a topic of which they have no formal training or knowledge." In doing so, students learn the pathways for conducting research which are applicable to all kinds of investigations. Thus, students in these three programs take skills built in the classroom and apply them to real-world problems and challenges.

Community nature. The faculty directors noted that their ability to utilize active learning pedagogy, garner participation in co-curricular activities, and require action learning projects is directly related to the community nature of their programs. Students in these programs have a high level of comfort with each other and with the faculty directors. This comfort level makes them more open to participating fully with active learning pedagogy. The director of the American Studies program stated:

A true learning community develops over time. It requires mutual energy and commitment [from students]. It is impossible to create this kind of atmosphere in a sixteen week semester; you need multiple semesters to get them fully engaged and learning…. In a traditional classroom, learning is top-down, led by an instructor at the front of the room. I wanted learning in this program to bubble up from the community itself.

Creating this kind of an atmosphere takes time and dedication from the instructor, but also the students themselves. Some faculty members noted that the community-based nature of their program could be a challenge as well. The director of the Leadership program explained that "the learning community allows for instant conversation and interaction, but often the students were too comfortable with each other. Their social lives would spill out into the classroom." She admitted that, while this was a challenge, she also saw it as an opportunity to "bring their life experiences to the table" in regard to course content. In fact, the director of the Creative Writing program saw the strong community-based nature of her program as key to its success:

> In writing, you have to be critical, but you also have to develop a thick skin. Our students go through an intense workshopping process where they share their writing with one another in a public setting. It's not easy to do this because reading your own work can be like baring your soul. Having a safe environment where they are comfortable sharing is essential.

Thus, having a strong community where students play an active role in the direction of their own learning is an important component to making these programs successful. Engagement and participation in program activities furthers the learning process.

Faculty contact. Because of the extended time that the faculty directors have to build relationships with students, it is not surprising that almost all of them stated that the contact they have with students is considerably greater than what they experienced as a faculty member outside of the learning community environment. Program directors simply spend more time with students through co-curricular activities and informal meetings. For example, the director of the Astronomy program notes that he spends:

twenty hours per week in office hours for [the learning community director] role.

And this isn't even counting the time I spend with students on field trips and

social activities. As a faculty member, I'm only required to hold one office hour

per credit I teach. So, yes, I know these students much better than others I've

taught.

Furthermore, the range of contact that faculty directors have with students is much

greater than the standard faculty-student relationship. As noted by the director of the

Research Methods program, "because you build such close relationships with students,

the conversations spill over into other areas of their lives. I have helped students with

their transition to university as well as with personal crises." Not only do the faculty

directors talk to students about academics, but they also have conversations regarding

personal, social, and career concerns.

For some of the programs, these conversations are formalized; students are

required to meet with the faculty director and provide an update on how their learning

community experience is going. The director of the Life Sciences program requires every

student to meet with him "individually each semester for at least 15 minutes for a check-

in." Not only does this help him identify at-risk students, but it helps him get to know the

student outside the classroom. In other programs, these conversations develop informally

through out-of-class conversations and interactions. Either way, the unique nature of

learning communities creates an atmosphere that differs greatly from the standard

academic experience. The director of the Media Studies program notes that:

you tend to make more of an investment because you know the students will be

with you for two years. Students feel this too. When they ask me for

recommendations, it feels like no one else at the university knows them.

Because students are assigned to cohorts that stay together over time, faculty directors

have the opportunity to build structures that enhance student learning and create stronger

relationships between students and faculty members.

Strength of focus. It should be noted that there are some differences among the

learning community programs in regard to the level of focus each program has toward

disciplinary skills and active learning pedagogy. Some programs have a high focus on

disciplinary skills and knowledge and the faculty directors were explicit on how those

skills were imparted. Others are a bit more diffuse in their approach. For example, the

faculty director for Education/Human Development had a difficult time articulating how

well his program exposes students to the skills and knowledge most needed for success in

that field:

I'm not sure if there are specific skills. I guess we expected [our students] to know

about child development, but we never really expected that they would all pursue

careers involving children. It just wasn't our focus.

In contrast, the Creative Writing faculty director made clear connections between the

content of her program and the relationship it had to succeeding professionally as a

writer. The workshopping process she described above is "critical to their success as a

writer because they learn how to give and receive feedback about their writing without

taking it personally." Moreover, she noted that because students produce a literary

magazine each year as part of the program, they learn the entire publishing process and

the decisions that editors make on what should be included; "it's important that they be able to put themselves in the editor's shoes."

Similarly, the learning communities varied on how much active learning pedagogy they incorporated within the program. The faculty director of the Engineering program utilizes team projects and small-group discussions occasionally, but is more apt to rely on lecture during class. As he argued: "there's a lot of material to cover and I only have them for four semesters." In contrast, as noted above, the Business faculty director utilizes active techniques in every class meeting and incorporates a wide variety of approaches including simulations, self-reflections, team projects, reflective writing, and case studies. This director noted that his research background in organizational development and leadership drove these choices; "it's what I know and what I believe in, to have students interact as teams." The variation described above in regard to disciplinary skills and active learning techniques is detailed below in Table 11.

Table 11

Strength of Learning Communities' Focus

Disciplinary Focus	Focus on Disciplinary Skills	Focus on Active Learning Pedagogy
American Studies	Low	Medium
Arts	Low	Low
Astronomy	Low	Medium
Biology	Medium	Medium
Business	High	High
Creative Writing	High	Medium
Earth Science	Medium	Medium
Education/Human Development	Low	Medium
Engineering	Medium	Low
Environmental Science	Medium	Medium

Humanities	Low	Low
International Studies	Low	Medium
Leadership	Low	Medium
Media Studies/Journalism	Medium	Medium
Research Methods	High	High
Systems Engineering	High	High

Quantitative Findings

The following section presents the quantitative findings of the study. I begin with

a profile of the analytic sample, then present an overall picture of the relationship

between congruence and each study variable, and finally offer the results from the

logistic regression analysis.

Profile of analytic sample. As noted in Chapter 3, I made a number of data

decisions in order to ensure that the analytic sample was appropriate for the analysis. In

some cases respondents were excluded, and in other cases I imputed data. These

decisions were driven by the literature as well as keeping the focus on my primary

research question. Given these changes, I summarize the final profile of the analytic

sample below (See Table 12). In terms of demographic characteristics, the analytic

sample is mostly female (58.6%) and non-minority (78.2%). Almost two-thirds of the

sample (64.7%) had a declared major upon entry to the university, while the remainder of

respondents (35.3%) were undecided upon entry. Twelve percent (12.2%) of the analytic

sample participated in a learning community. After removing the Realistic and

Conventional Holland types, respondents could be found in each of the four remaining

types: Investigative (49.5%), Artistic (11.9%), Social (13.0%) and Enterprising (25.5%).

As with the initial sample, Investigative majors were the dominant type in the analytic

sample. Finally, the analytic sample is weighted more heavily toward the 2002 cohort

(44.8%) as opposed to the 2005 (27.4%) and 2008 (27.8%) cohorts. These frequencies

are similar to the proportions found in the initial sample as detailed in Chapter 3. SAT

scores in the final analytic sample ranged from 690 to 1600 with a mean score of 1213.

Table 12

Frequencies for categorical variables in the analysis

Variable		Proportion of Analytic Sample
Congruence	Yes	86.8%
	No	13.2%
Gender	Female	58.6%
	Male	41.4%
Minority Status	Minority	21.8%
	White/Asian	78.2%
Undecided at Entry	Yes	35.3%
	No	64.7%
Survey Cohort	2002	44.8%
	2005	27.4%
	2008	27.8%
Holland Type	Investigative	49.5%
	Artistic	11.9%
	Social	13.0%
	Enterprising	25.5%
Learning	Yes	12.2%

Community	No	87.8%

Overall relationship of congruence. In order to ascertain the overall relationship between each independent variable and job/major congruence, I examined the proportion of individuals in each group who reported achieving congruence and ran crosstabulations for each variable (see Table 13). Overall, the vast majority of respondents in the analytic sample indicated congruence (86.8%) and the proportions remained quite high for all study variables. Crosstabulation analyses indicated significant relationships between job/major congruence and minority status ($\chi^2 = 9.001$, $p = 0.003$), those who were undecided at entry ($\chi^2 = 19.658$, $p < 0.001$), those with Artistic majors ($\chi^2 = 11.459$, $p = 0.001$), and those with Social majors ($\chi^2 = 5.24$, $p = 0.022$). Of most interest to the present study, the data indicated a significant relationship between learning community participation and job/major congruence ($\chi^2 = 8.064$, $p = 0.005$).

Table 13

Relationship Between Independent Variables and Job/Major Congruence

	Proportion Reporting Congruence	**Chi-Square**
Overall	86.8%	---
Female	86.7%	1.548
Minority Status	83.5%	9.001**
2002 Cohort	87.8%	0.344
2005 Cohort	85.9%	1.852
2008 Cohort	88.2%	0.489

Undecided	83.3%	19.658***
Investigative	86.2%	2.690
Artistic	80.8%	11.459***
Social	91.6%	5.240*
Enterprising	88.4%	0.631
Learning Community Participation	92.6%	8.064**

* Significant at .05 level, ** Significant at .01 level, *** Significant at .001 level

Logistic regression analysis. The logistic regression model fits the data well. The chi-square test is significant ($\chi^2 = 56.458$, p < 0.001) and the model correctly predicts sixty-four percent of the data in the sample (64.3%). This is larger than the fifty percent prediction rate one might expect by chance alone. Controlling for other factors, learning community participation has a significant, positive effect on the likelihood of achieving job/major congruence (B = 0.618, $p = 0.01$). Additionally, minority status (B = -0.396, $p = 0.006$) and being undecided at entry (B = -0.573, $p < 0.001$) has a significant, negative effect on the likelihood of achieving job/major congruence. In regard to Holland type, Artistic personalities (B = -0.371, $p = 0.046$) are slightly less likely to achieve job/major congruence when compared to Investigative types, whereas Social personalities (B = 0.653, $p = 0.006$) are slightly more likely to achieve congruence. Gender, SAT score, and cohort have no significant impact on the likelihood of achieving job/major congruence. Table 14 below presents the odds and logged odds for the logistic regression model.

Table 14

Predictors of Job/Major Congruence (n = 2,192)

	B	Exp(B)
Female	-0.161	0.852
Minority Status	-0.396**	0.673
SAT Score	.000	1.000
2005 Cohort	-0.199	0.820
2008 Cohort	0.048	1.049
Undecided at Entry	-0.573***	0.564
Holland Type- Artistic	-0.371*	0.690
Holland Type- Social	0.653**	1.922
Holland Type- Enterprising	0.281	1.325
Learning Community Participation	0.618**	1.856
Constant	1.932***	6.901

* Significant at .05 level, ** Significant at .01 level, *** Significant at .001 level

Marginal probabilities. Participating in a learning community improved one's chances of achieving job/major congruence by over five percent (5.4%). Thus, learning community participants were slightly more likely to report job/major congruence one year after graduation when compared to their non-participant peers regardless of gender, minority status, SAT score, Holland personality type, cohort, or undecided status at entry. In addition, those with Social majors were almost six percent (5.6%) more likely to

achieve congruence when compared to Investigative types and controlling for all other factors.

In contrast, minorities were five percentage points (5.0%) less likely to be in jobs congruent with their majors when compared to their White and Asian-American counterparts. Alumni who were undecided about their major when they started college were almost eight percentage points (7.8%) less likely to report job/major congruence compared to alumni who started college with a clear choice of major. Finally, those who majored in Artistic fields were almost five percent (4.6%) less likely to report job/major congruence when compared to Investigative types and controlling for all other factors.

In sum, the logistic regression findings indicate that, irrespective of cohort or academic discipline, learning community participation has a slight but significant impact on a college graduate's probability of reporting a job that is congruent with his or her major one year after graduation.

Summary

As a mixed-methods, concurrent embedded design, this study relies on both quantitative and qualitative findings to present a full picture of the research question at hand. The quantitative analyses indicate that there is a positive relationship between learning community participation and achieving job/major congruence one year after graduation. Learning community participants improve their chances of achieving congruence by about five percent (5.4%). This effect holds regardless of gender, race, academic ability, discipline, or cohort. The qualitative findings shed light on why this might be the case by providing insight into the unique structures and approaches utilized by the learning community programs. In the next chapter I delve deeper into the

qualitative findings as I discuss how the findings fit within prior research on learning

communities, academic socialization, and Holland's (1997) theory of vocational choices.

CHAPTER 5: DISCUSSION

In the past few decades, learning community programs have become widespread in American higher education (Pike, 2008). Institutions have embraced these programmatic interventions because they successfully enhance the student experience and support student outcomes (Heiss, Cabrera & Brower, 2008; Price, 2005; Smith, Matthews, MacGregor, & Gabelnick, 2004). While previous learning community research has been overwhelmingly positive, the majority of these studies have focused on college-level experiences and outcomes (Barnett, Miller, Polito, & Gibson, 2009; Blimling, 1993; Driscoll, Gelabert, & Richardson, 2010; Heiss et al., 2008; Hotchkiss, Moore, & Pitts, 2006; Inkelas, Szelenyi, Solder, & Brower, 2007; Inkelas, Vogt, Longerbeam, Owen, & Johnson, 2006; Inkelas & Weisman, 2003; Lipson, Epstein, Bras, & Hodges, 2007; Pike, 1999; Pike, Schroeder, & Berry, 1997; Smith & Bath, 2006; Stassen, 2003; Tinto,1997; Tinto & Love, 1995; Tsui, 1998; Whalen & Shelley, 2010; Zhao & Kuh, 2004). Few researchers have examined the connection between learning communities and alumni outcomes such as career attainment and success (Taylor, 2003).

Holland's (1997) theory of vocational choice represents one framework for examining learning communities and how these programs influence career attainment and success. The ideas of personality, environment, and congruence are a natural fit for examining the college experience and the overall impact that college has on career and alumni outcomes. Smart, Feldman, and Ethington (2000) successfully applied Holland's framework to higher education settings by examining the role that academic

environments have on student major selection and skill development. Their research found that the unique structures and approaches used by faculty within academic environments socialized students toward particular disciplines.

I contend that learning communities also act as distinct academic environments that have socialization effects upon student participants. In fact, previous research examining discipline-based learning communities supports the idea that learning communities socialize students toward particular disciplines (Barnett, et al, 2009; Mickelson, Harms and Brumm, 2007; Purdie, Williams, & Ellersieck, 2007; Smith & Bath, 2006). While these studies found that disciplinary knowledge and skills increased due to learning community participation, none examined congruence as an outcome. Given Holland's (1997) theory, and the fact that learning communities socialize students toward particular academic disciplines, one would expect that participants in such programs would be more likely to achieve job/major congruence after graduation.

In order to examine whether alumni who participated in a learning community program during college are more likely to achieve job/major congruence within one year of graduation compared to their non-participant peers, I examined data from an alumni survey at a single institution. The study institution is a large, research university located on the east coast of the United States. Students at the institution can choose to participate in a variety of learning communities during their college experience. I selected sixteen disciplinary-based learning communities for this study based on three criteria: curricular requirements, active learning pedagogy, and breadth of programs. Students who participated in these programs were classified as learning community participants for the quantitative analysis. In addition, I conducted face-to-face, semi-structured interviews

with the faculty directors for each program. Not only did these interviews ensure that the programs were appropriate for inclusion of the study, but they provided unique insight into the structures and approaches that each learning community uses to achieve their goals.

This study sought to examine the relationship between learning community participation and job/major congruence. As such, the findings extend the learning community research into the domain of career attainment, an important and untapped area of research. Additionally, the mixed methods design of the study provides some depth to learning community research by examining the structures that underpin these programs' success. Finally, this study relies on the work of Holland (1997) to provide a strong theoretical basis for its conceptual framework. As such, the findings support both Holland's theory of vocational choices as well as enhance the learning community literature.

The following chapter discusses the findings presented above in greater detail. I begin with a summary of the quantitative findings paying particular attention to how these findings fit within the literature. Where possible, I utilize the qualitative portion of the study to provide insight into the findings. The interviews with program directors shed light on the structures and approaches that are unique to discipline-based learning communities. After discussing the findings in detail, I present the limitations of this study as well as provide directions for future research. I then review the implications of these findings for both institutions as well as learning community directors. Finally, I conclude with a few thoughts on how this study fits within the larger context of the true purpose of higher education.

Summary of Findings

Overall level of congruence. Simply examining the proportion of individuals who reported achieving job/major congruence at the study institution provides promising results. One year after graduation, the vast majority of alumni (86.8%) report being in a job that is directly or somewhat related to their major. Reports of congruence are high across a wide variety of student characteristics including gender, race, survey cohort, and academic discipline. The high level of congruence reported by most respondents is consistent with the findings of Cabrera, deVries, and Anderson's (2008) examination of Mexican alumni where over 86% of respondents reported medium or complete congruence between job and major. In sum, it appears that graduates of the study institution fare quite well in finding jobs that are congruent with their major one year after graduation.

Congruence across variables. Crosstabulation analyses of the proportion of individuals reporting job/major congruence across various types of individuals reveal slight differences. Students from traditionally underrepresented groups (i.e. African-American, Latino, and Native American students) are significantly less likely to report congruence (83.5%). Moreover, undecided students are also significantly less likely to report congruence (83.3%). In terms of discipline or Holland type, students in Artistic majors are significantly less likely to report congruence (80.8%), while students in Social majors are significantly more likely to report congruence (91.6%). Finally, those who participated in a learning community are significantly more likely to report job/major congruence (92.6%). These differences in reported levels of congruence across major

type are discussed in greater detail below in terms of the findings from the logistic regression analysis.

   Logistic regression. The logistic regression analysis reveals that minority status, Holland type, entering the institution as undecided, and learning community participation are each significantly related to job/major congruence. In contrast, gender, survey cohort, and SAT score do not have a significant effect on achieving job/major congruence. As a reminder, the starting point or null individual for the model is a non-minority male with an average SAT score from the 2002 cohort group who had a major upon entry to the university, exhibited an Investigative Holland personality type, and did not participate in a learning community at the institution. Each significant finding is in contrast to this starting point.

   Minority status. Controlling for all other factors, being a student from a traditionally underrepresented group decreases the chances of reporting job/major congruence one year after graduation by five percent (5.0%). Previous research directly examining job/major congruence (Cabrera, et al, 2008; Elton & Smart, 1988; Fricko & Beehr, 1992; Smart, et al, 1986; Wolniak & Pascarella, 2005) does not provide insight into why this might be the case. These previous studies either did not control for race or did not report significant differences between racial groups. Broader research on Holland's concept of congruence, however, does provide some insight into racial differences in regard to this measure.

   Tracey and Robbins (2005) reported that African-Americans, Hispanics, and Native Americans were less likely to achieve congruence between personality and environment in comparison to Whites and Asian-Americans. The researchers note that

116

these differences may be due to overt discrimination, perceived or actual barriers to career attainment, or "the unique values associated with each culture" (Tracey & Robbins, 2005, p. 338) that encourage some career choices over others. Similar causes could be occurring in this study.

   Holland type. As noted in the methodology section, although Holland type broadly describes work preferences and environments, it is a useful tool for classifying academic majors (Smart, et al, 2000). Controlling for all other factors, alumni who graduated with Investigative majors report high levels of job/major congruence (86.8%). Social majors tend to fare even better; graduating with a Social major increases one's chances of achieving job/major congruence by almost six percent (5.6%). In contrast, Artistic majors are almost five percent (4.6%) less likely to report achieving job/major congruence one year after graduation in comparison with their peers in the Investigative fields. These differences by Holland type are not surprising when one considers the academic disciplines associated with each type and the fact that some majors are simply more closely aligned with occupations than others.

   As noted by Carnevale, Cheah, and Strohl (2011), individuals with "majors that are more closely aligned with particular occupations and industries tend to experience" (p. 5) greater success in the job market as measured by lower unemployment rates. Investigative majors include engineering, as well as the applied and social sciences. Additionally, the vast majority of individuals in the Social type are found in Education majors. In many respects, students in both Investigative and Social disciplines have a clear pathway to follow from major to career because the discipline is closely related to specific occupations. In contrast, the Artistic type represents a wide variety of majors and

career paths including the fine arts such as Music and Theater, as well as disciplines from the humanities such as Philosophy and English. For some majors in the Artistic type, the pathway to career is not clear. Take the case of Philosophy, for example, a major for which graduates may struggle with finding an occupation that meets the skills and knowledge gained in their academic pursuits. For students who pursue other Artistic disciplines, on the other hand, job opportunities may be limited. A Music Performance major may have a clear pathway but few opportunities to find a job related to his or her major. In fact, a quick comparison of labor market trends for a similar group of graduating students demonstrates that disciplinary type directly impacts success on the job market.

The Baccalaureate and Beyond Longitudinal Study (National Center for Education Statistics, 2011) recently examined the employment trends of college graduates who completed their post-secondary education in 2007. One year after graduation, participants were asked their current employment status. Overall, eight-four percent (84.1%) of the participants in the study had secured employment one year after graduation. These numbers were slightly higher for those who majored in Investigative disciplines such as science and engineering. Engineering majors were employed at a rate of 88.9%. Computer and information science majors were employed at a rate of 88.0%. The employment rate for graduates in the education field, who make up most of the Social majors, was also very strong (90.8%). In contrast, respondents who had graduated in the humanities, a good analogue to Holland's Artistic type, were employed at a rate of only 79.7%. Though the respondents in the Baccalaureate and Beyond (B&B) study only overlap with one cohort in the current analysis, its findings clearly demonstrate that

employment rates vary by disciplinary type. Additionally, it is interesting to note that this recent analysis of B&B data is consistent with the findings of this study. Though the B&B analysis focuses on employment rates and my study examines rates of job/major congruence, both studies conclude that disciplinary type impacts labor market success for recent college graduates.

Given the reality of labor market forces (National Center for Education Statistics, 2011) and the fact that some disciplines are more closely aligned with occupations (Carnevale, et al, 2011), it is not surprising that the current study finds differences in regard to job/major congruence when assessed by Holland type. These findings are consistent with previous research utilizing Holland's theory. Though they used slightly different measures for examining discipline, Cabrera, deVries, and Anderson (2008), for instance, found stark differences in regard to Mexican alumni achieving congruence. Those who graduated with traditional majors (i.e. law, medicine, accountancy, administration, architecture and engineering) were much more likely to report congruence between major and job in comparison to those who graduated with majors that were introduced into Mexican higher education more recently. Similarly, Wolniak and Pascarella (2005) found that an individual's level of satisfaction with their job, a commonly used outcome measure for congruence research, varied significantly by disciplinary type. Alumni in Artistic fields were more likely to report satisfaction with autonomy, while those in Investigative fields were more likely to report satisfaction with income level. Clearly, levels of congruence and satisfaction vary by disciplinary focus.

Undecided status. Controlling for all other factors, entering the university as an undecided student decreases one's probability of reporting job/major congruence one

year after graduation by almost eight percentage points (7.8%). As noted, in the methodology section, researchers examining job/major congruence tend to ignore students who enter as undecided (Cabrera, et al, 2008; Elton & Smart, 1988; Fricko & Beehr, 1992; Smart, et al, 1986; Wolniak & Pascarella, 2005). The emphasis for these studies tends to be on the major the student exhibits upon graduation, not their major status at entry.

The fact that being undecided at entry reduces the probability of achieving job/major congruence may be a unique finding for this study. Though previous research has not examined the relationship between undecided status and congruence, Holland's (1997) theory of vocational choice provides an explanation of why undecided status may reduce one's chances of achieving job/major congruence. Careers are a series of choices that bring one closer to achieving congruence over one's lifetime. In order to progress through one's career and achieve strong congruence between personality and work environment, the individual must be exposed to multiple environments over time. It may simply be that students who enter as undecided may not have yet had enough exposure to majors and careers. Their major upon graduation may represent their first such career choice and simply not be the best fit for their personality. Over time these individuals will move closer to a work environment that best fits their personality in accordance with Holland's theory.

Though no known research examines the impact of undecided status on job/major congruence as outlined above, prior research focusing on the relationship between life history and congruence lends some support to the notion that undecided students may have fewer experiences to draw upon when making their final major selection. Prediger

and Swaney (1986) examined the interests and occupational experiences of high school students and then measured that same group six years later. In the later measure, participants had a wider breadth of occupational interests as well as interests that were more congruent with their personality type. Thus, as participants' occupational experiences increased over time, they were more likely to select occupations that were congruent with their true personality. Similarly, Oleski and Subich (1996) found that working adults faced with a career change were more likely to pursue jobs that displayed stronger levels of congruence with their personality. The researchers contend that this finding lends support for Holland's (1997) claim that congruence increases over time due to greater opportunities to explore congruence in actual work settings.

Learning communities. Of key interest to the current study is the impact that learning communities have on the probability of achieving job/major congruence. The findings indicate that learning community participation improves one's chances of achieving congruence one year after graduation by over five percent (5.4%). These benefits accrue to participants regardless of race, gender, or academic discipline. No known previous research has attempted to examine the relationship between learning community participation and job/major congruence. As such, this connection may be a new and unique finding for the literature on learning communities.

In order to understand this finding better, I turn now to the qualitative portion of this study. As noted in the methodology section, utilizing a concurrent embedded design allows the researcher to illustrate the quantitative findings in unique ways, or as Bryman (2006) puts it: to add "meat on the bones of 'dry' quantitative findings" (p. 106). Thus, I next explore how learning communities serve an academic socialization function that

positively impacts job/major congruence. In drawing these connections I rely directly upon the qualitative data taken from the program director interviews as well as the prior literature on Holland and learning communities.

Learning Communities and Academic Socialization

For the purposes of this study, I specifically selected disciplinary-based programs in which students enroll in intentionally linked courses as a cohort. In some ways, this decision was driven by the methodology. Selecting programs with similar structures allowed me to combine them for quantitative analysis. In other ways, however, I made this selection decision to support the conceptual framework that guides this study. Disciplinary-based learning communities represent distinct academic environments that have unique socialization effects on students. Each program included in this study is designed to introduce students to a particular discipline and provide them with the opportunity to learn and apply particular knowledge and skills associated with that discipline.

The learning communities represented in this study are based in a number of disciplines ranging from engineering to creative writing, from journalism to the arts. Though they vary in focus, each program introduces students to the knowledge and pathways associated with that discipline. For example, students in the Business program learn those skills essential to success in the field such as leadership, teamwork, and presentation skills. In contrast, students in the astronomy program hone their analytical thinking skills so that they can become more critical consumers of research. As detailed in Chapter 4, the faculty directors of the programs easily identified the knowledge and

skills most essential for success in their field and how their program addressed these items.

Moreover, the learning communities in this study focus on disciplinary knowledge and skills in ways that promote the most effective student learning. Each program relies extensively on active learning pedagogy. For some programs, this takes the form of a culminating action learning project whereby students apply what they have learned to a real-world problem or challenge. For other programs, active learning techniques are spread throughout the experience via classroom and co-curricular activities. A typical semester for one of these programs might include: frequent small group discussions on course topics, site visits to organizations related to the discipline, debate or role play around a controversial subject, and a team presentation in place of a term paper or exam.

Utilizing active learning approaches enhances students' learning and allows them to apply the knowledge and skills associated with their particular discipline in ways that one might not find in a traditional classroom (Barnett, et al, 2009; Mickelson, et al, 2007; Purdie, et al, 2007; Smith & Bath, 2006). During the interview process for this study, numerous faculty directors noted that small class sizes and the cohort-based nature of their program allowed them to pursue approaches and techniques that they would never have time for in courses taught outside the learning community. Additionally, students in the learning community, they noted, were more likely to be receptive to this form of pedagogy due to the tight-knit nature of the community. Put simply, students were more comfortable engaging with their peers because they knew them well. As such, the faculty

directors were able to create structures within the learning community that enhanced student learning in regard to the disciplinary focus of the program.

Perhaps the best example of how this works is from the Creative Writing learning community included in this study. In this program, students engage in an intensive writers' workshop experience whereby they write pieces that are shared with their peers in a public format. Not only does this improve their writing, but it prepares the students to receive feedback about their work. Receiving feedback is an essential component of pursuing writing as a career. Not only must professional writers be open to suggestions from editors, but they must also be able to stand by their work regardless of how critics or the public might react. The writers' workshop allows them to experience this process in a somewhat safer, peer-based environment. Moreover, because students in the program live together, they learn to provide feedback in ways that are constructive. As the director of the program noted, it is difficult to tear another writer's work completely apart when you might run into him or her later while brushing your teeth. The director of this program went on to explain that this level of feedback and experience could never be achieved in a traditional classroom format. She needed both the time and space that the learning community provided to create the right atmosphere for such a pedagogical approach.

Because the learning communities included in this study focus on disciplinary knowledge and skills and rely on active learning techniques, the process that these programs use in socializing students toward an academic discipline may be more intense than what one would find in an academic major alone. Outside the learning community environment faculty have less time and fewer opportunities to include active learning pedagogy in the classroom. Given that active learning techniques are strongly associated

124

with both student learning and application of that knowledge (Cabrera, Colbeck, and

Terenzini, 1998; Carini, Kuh, & Klein, 2006; Matveev & Milter, 2010; Tsay & Brady,

2010), it stands to reason that the learning community programs in this study are more

effective at academic socialization. In other words, students who participate in learning

communities are more knowledgeable of the discipline itself and better at applying

disciplinary skills to solve real-world problems. Previous research (Barnett, et al, 2009;

Mickelson, et al, 2007; Purdie, et al, 2007; Smith & Bath, 2006) has provided strong

evidence that this is the case.

Put in terms of Holland's (1997) theory, learning community programs are

effective at academic socialization because they have strong environmental identities.

These programs present clear and consistent goals and approaches that are directly related

to that disciplinary type. Thus, learning communities can, in many ways, be more

impactful than the student's experience in the academic major alone. If so, this may

explain why learning community participation increases one's chances of achieving

job/major congruence. The better socialized one is toward a discipline, the more likely

that individual is to be successful from an academic and career perspective.

As noted in Holland's (1997) theory and supported by the research of Smart,

Feldman, and Ethington (2000), those individuals who have a firmer grasp of the

techniques, approaches, and norms of a particular discipline will be more likely to find a

good environmental fit. Because of the inherent structures and processes involved in

learning communities, participants in these programs are given greater opportunities to

learn and apply disciplinary skills and knowledge. Thus, learning community participants

have a distinct advantage in achieving congruence over those who did not participate in a learning community.

Conceptual framework. The quantitative and qualitative findings support the conceptual model which undergirds this study (see Figure 2, Chapter 2). However, it should be noted that the findings simply address the overall effect of Holland's theory. The individual constructs which make up the theory and how each construct impacts job/major congruence are not addressed in the current study. For example, the current study does not explore how interactions between the various constructs may be at play.

Students do not simply experience one academic environment during their college years. Each academic course they enroll in, as well as the extracurricular activities that they pursue, can serve as environments which shape their vocational choices. Thus, it should be acknowledged that even learning community participants experience two key environments as part of their college experience: their major and their learning community program. It is entirely possible that one of these experiences may overshadow the other and have a stronger impact on the student. Moreover, there could be an interaction effect taking place whereby the combination of a learning community and major intersect with one another in ways not accounted for by the model. These realities point to areas of exploration for future research, addressed further below.

In addition to the constructs, other factors not included in the model may also be at work and directly influencing job/major congruence. For example, it is possible that learning community participation contributes to the growth of individual characteristics such as increased self-confidence, greater social skills, or improved self-concept. These conceptions are not explicitly addressed by the model. However, Holland (1997) would

126

argue that individual characteristics or notions of self-concept are captured through the construct of personality. He notes that personality is derived from "self-concept, self-perception, beliefs and values, coping styles, and personal traits" (Holland, 1997, p. 18). As such, the theory already accounts for individual characteristics. However, one could argue that a more in-depth exploration of the constructs is needed in regard to the intersection of learning community experiences and the development of personality.

Limitations

While the findings support both the conceptual framework and the previous literature on academic environments and socialization, this study does not provide clear, convincing evidence that learning communities have a strong impact on job/major congruence. A significant, positive relationship between learning community participation and congruence exists, but the impact of such participation is slight. It is possible that the results would be stronger if some of the limitations of the study were eliminated.

Measures. In order to create a parsimonious dataset for the study, I made a number of methodological decisions which may have impacted the results. First, as a secondary data analysis, my measures were shaped by the available data. As one example, because I was unable to directly assess Holland type, I selected major upon graduation as a proxy for personality. This decision is consistent with previous research on Holland (Elton & Smart, 1988; Fricko & Beehr, 1992; Smart, et al, 1986; Wolniak & Pascarella, 2005) but could have impacted the findings of the study. A direct measure of personality would be the most accurate way to assess this construct.

More importantly, the alumni survey, from which my dataset was generated, had a unique response item for the dependent variable. The response option "not related, but not important to me" is not found in the congruence literature. Wolniak and Pascarella (2005) utilized an ordinal, four point scale ranging from "not at all related" to "highly related." Cabrera, deVries, and Anderson (2008) also relied on an ordinal, four point scale ranging from "not at all related" to "totally related." The dataset I drew from did not allow me to place the response options into an ordinal scale. Moreover, I had trouble interpreting why someone might select the "not related, not important to me" response option. As a result of these concerns, I decided to remove the respondents who selected this option from the study. As such, the findings can only be generalized to those individuals who achieved congruence (directly or somewhat) or clearly did not achieve congruence.

Alumni survey administration. The alumni survey at the study institution is administered one year after graduation. Previous research has demonstrated that surveying alumni so close to graduation does not present the most accurate picture of their employment status (Cabrera, Weerts, & Zulick, 2005). It may take an alumnus longer than 12 months to find his or her desired job or s/he may take a less desirable job just to secure employment. However, the only available data for the institution was collected during this timeline. Conducting the survey further out from graduation may yield more interesting results.

Learning community participation. A third limitation arises due to the fact that I combined the selected programs in order to determine which students participated in a

learning community. The experiences of students in these programs were not entirely equal. As explained in Chapter 4, some programs had a stronger disciplinary focus; others had stronger active learning components. It is possible that some learning community programs are simply better than others at academic socialization and improving an individual's chances of job/major congruence. Unfortunately, treated separately, the sample sizes for each program would not have been sufficient for meaningful statistical analysis. I attempted to compensate for combining the learning communities by including a qualitative portion to the study which would ensure some comparability across programs. Further research would benefit from having a larger sample to gain greater understanding of how individual learning communities may impact job/major congruence.

Additionally, the learning programs selected for this study represent just one subset of learning communities at the institution. It is possible that those classified as non-participants in my analysis actually did participate in a learning community not included in my study. As I note in the methodology section, one program director did not agree to participate in the study. Thus, some learning community effects could be occurring to those in my sample who are viewed as non-participants. As such, it is possible that the impact of learning community participation on job/major congruence is actually greater than estimated by this study. A direct way to address this limitation would be to screen out those students who participated in other learning communities at the study institution. Doing so may actually demonstrate that learning community participation has a greater influence on reporting job/major congruence than accounted

for in the current analysis. Unfortunately, not all of these students are tracked accurately because many of the programs not included in my study lack curricular requirements.

Labor market trends. This study does not fully account for employment trends in the labor market. As mentioned above, certain majors may lend themselves better to landing employment after graduation. Graduates in high demand areas such as the Investigative majors may simply fare better on the job market when compared to those in other disciplines. That being said, the primary research question compares the experiences of learning community participants and their non-participant peers. Given that the learning communities in the study represent a wide range of disciplines, any employment trends present during the study period should have affected both groups equally. Moreover, I attempted to control for these effects by including a cohort variable in the regression analysis.

Selection bias. A final limitation of this study is selection bias in the sample. It is entirely possible that students who choose to participate in learning communities share some unique quality or factor that makes them more likely to experience job-major congruence. As Stassen (2003) points out, learning communities may be comprised of those students who are the "most motivated to achieve" (p. 587). Thus, any conclusions drawn about this group may have more to do with these shared characteristics than the impact of participation in a learning community. I attempted to account for differences between the learning community participants and non-participants by controlling for certain individual characteristics in the logistic regression in accordance with previous

learning community research. Unfortunately, there may be unobservable differences between these two groups that are beyond the scope of my research design.

Despite these limitations, this study has important implications for both theory and practice. To date, no known research exists examining the relationship between learning communities and job/major congruence. Not only does this study expand the learning community research base into the area of alumni outcomes, but it also relies on an empirically tested theory as a foundation for exploring the underlying structures of learning community programs. In the next section, I explore how the current study may help shape future learning community research.

Future Research

The findings from this study indicate that further research examining the connection between learning communities and job/major congruence is warranted. Though positive, these findings are slight. Additional research could shed light on the true nature of this relationship. Moreover, this study expands the lens by which researchers can view learning communities. Applying the notion that learning communities serve an academic socialization function takes research on these programs in new directions. Finally, very little research has examined the impact that learning communities have on alumni outcomes. Job/major congruence is certainly one important outcome impacted by learning communities, however, additional career and alumni outcomes may result as well.

Replicating the findings. Researchers seeking to replicate and enhance the findings of this study should rely on direct measures if possible. One of the limitations of this current study is that I was limited to utilizing questions developed by other individuals for different purposes. Having a direct measure for Holland Type and a clearer measure for job/major congruence (i.e. dichotomous or Likert scale) would certainly be preferred. Wolniak and Pascarella's (2005) use of an ordinal scale is a more effective way of examining the construct of job/major congruence and is recommended to future researchers. Employing direct measures would also improve the construct validity of the study. In addition, as mentioned in the limitations above, it would be preferable to collect alumni survey data further out than one year after graduation. Volkwein (2010) suggests surveying alumni four to five years after graduation. This would ensure that these individuals had sufficient time to find their preferred or desired job. Other researchers are encouraged to build upon this study's findings by directly addressing the limitations presented in the section above.

The ideal approach. The ideal approach to examining the true impact of learning community participation on job/major congruence would take the form of a ten-year longitudinal study following students through their critical vocational development stages. This study would begin during high school, follow students through their college experience, and continue to track participants after their entry into the workforce. Such an approach would allow the researcher to control for a wide range of entry characteristics, track student-level experiences during college, and follow up with alumni five years after graduation. Multiple surveys could be administered over this time period to track changes and growth in regard to disciplinary interests and skills, as well as any changes that occur

once the participants enter the workforce. Given Holland's (1997) theory one might

expect that both college-level and workforce experiences lead to greater congruence over

time. A longitudinal study would also benefit from the opportunity to track changes to the

learning communities as well. Over a ten-year period, it is possible that a learning

community program could change substantially in terms of structure or curriculum. At its

simplest, even changes in budgetary allotments might impact the effectiveness of a

learning community.

The ideal study would also include data from multiple institutions. Not only

would this increase the overall sample size, but it would ensure that the findings were

generalizable to multiple campuses and settings. However, care must be taken to ensure

comparability among learning communities and institutions. As noted in the literature

review, there are many different types of learning communities, some of which have little

or no academic focus (Lenning & Ebbers, 1999). A researcher examining the impact of

learning community participation on job/major congruence would need to ensure that the

learning community programs included in the study are academic in nature and

comparable with one another. Because learning communities are so widespread in

American higher education (Pike, 2008), it is possible that colleges and universities could

partner with one another to share data and study these outcomes in ways that are mutually

beneficial for each institution. In addition, such an arrangement may present

opportunities for shared learning on best practices, addressing challenges that are unique

to learning communities, and interactions among learning community directors.

In fact, a model for such an approach already exists within one subset of learning communities. The National Study of Living-Learning Programs (NSLLP) was founded in 2007 in order to gain a national picture of how living-learning programs impact social, academic, and developmental outcomes for students (Inkelas, Szelenyi, Soldner, & Brower, 2007). The sixty institutional partners in this study have access to school-level as well as national data to track the impact of living-learning programs on a variety of outcomes over time. The NSLLP, however, examines only those learning communities which have a residential component, many of which are not academic in nature. As such, the findings tend to skew toward social outcomes such as peer relationships rather than academic outcomes. Moreover, the NSLLP has yet to examine the impact that these living-learning programs have on alumni after they leave the institution. Despite these differences, the NSLLP might serve as a useful model for building a national study of disciplinary-based learning communities.

Academic socialization. The qualitative findings of this study provide strong support for the notion that learning communities play an academic socialization function. Students who participate in learning community programs are more knowledgeable of the discipline itself and better at applying disciplinary skills to solve real-world problems. These findings are consistent with previous research on disciplinary-based learning communities (Barnett, et al, 2009; Mickelson, et al, 2007; Purdie, et al, 2007; Smith & Bath, 2006). Additional research on the socialization function of learning communities might explore whether such programs impact major selection, especially for undecided students. Smart, Feldman, and Ethington (2000) found that academic environments (i.e. academic departments) had strong impacts on major selection for college students. Based

on these findings, one might predict that participation in a learning community would improve the major selection process and result in students choosing majors congruent with their personality.

Moreover, Holland's concept of environmental identity could be directly applied to learning community research. Smart and Thompson (2001) concluded that differential environmental identities exist from discipline to discipline and that some academic departments display strong identities while others display diffuse identities. As with academic departments, learning communities may also exhibit a range of environmental identities that could have differential effects on participants. Though these explorations are beyond the scope of the current study, they would certainly make for interesting research.

Finally, applying the concept of academic socialization and Holland's (1997) construct of environmental identities to learning community research provides much needed depth to this body of work. Taylor (2003) notes that learning community research often neglects to fully examine the underlying structures that make learning communities so successful. The current study provides some initial insight. It appears that learning community programs socialize students toward academic disciplines through their inherent structures and practices. Learning communities tend to rely on active learning techniques, benefit from small cohorts, and allow for ample faculty-student interaction. The work of Holland (1997) and Smart, Feldman and Ethington (2000) provide an interesting lens by which to examine both the structures and outcomes of learning communities.

135

Career and alumni outcomes. Given the important role that learning

communities play in shaping students' academic experiences (Barnett, et al, 2009;

Mickelson, et al, 2007; Purdie, et al, 2007; Smith & Bath, 2006), it is somewhat

surprising that previous research on these programs has not expanded into the alumni

realm. In addition to replicating the findings of this study, researchers may want to

explore the impact that learning communities have on other career or alumni outcomes.

Following Holland's (1997) theory that congruence leads to satisfaction, a natural

extension of this research might examine whether learning community participants are

more satisfied in their occupations after graduation. Wolniak and Pascarella (2005)

provide a good model for such a study by examining three dimensions of job satisfaction:

autonomy, personal fulfillment, and financial characteristics. It would be interesting to

explore how learning community participation might impact these three areas of

satisfaction.

Additional career outcomes related to congruence, such as career stability and

success, may also be of interest. Previous research has demonstrated that congruence

leads to greater stability and success in the work place (Allen & Robbins, 2007; Bruch &

Krieshok, 1981; Schaefers, Epperson, & Nauta, 1997; Spokane, Malett, & Vance, 1978).

Thus, learning community participation may also positively impact career stability and

success. Measuring such outcomes would require longitudinal studies that track alumni

performance in the workplace over time. Additionally, researchers might decide to

include employers or workplace supervisors in such a study; measuring their opinions on

the ability of the employee to be successful in the job.

Though this study focuses on a distinct career outcome, job/major congruence, it is entirely possible that learning communities impact alumni in other important ways. For example, previous learning community research has explored whether participants have more positive views toward civic engagement (Rowan-Kenyon & Soldner, 2007) and sociocultural issues (Inkelas and Weisman, 2003) such as human rights and multiculturalism. It is entirely possible that such views stay with participants after graduation and shape how they contribute to society. Moreover, given the strong, positive impacts that learning community programs have on students, it is entirely possible that participants are more likely to contribute as alumni.

In examining how institutional experiences impact alumni giving, Monks (2003) notes that alumni who had higher levels of satisfaction, were more active in certain student organizations, and had greater contact with faculty and staff while a student contributed more to their alma maters. Given that learning communities have such positive impacts on participants, it is highly likely that alumni would be more satisfied with their institution and, therefore, more likely to give. Moreover, Monks' (2003) measures of engagement, involvement and faculty/staff contact, are also readily apparent in the learning community experience. It may be that the structures associated with learning community success also lead to greater engagement and alumni giving. Thus, future research should explore how learning community participation impacts institutional identity and giving. These are just a few examples of how learning communities may impact alumni experiences and behavior. Future research in this area is ripe for exploration.

Finally, as I note above in the discussion section, while the findings support an overall effect for the conceptual model which frames this study, additional work must be done to directly examine the constructs which comprise the model. To do so, a researcher would need to conduct structural equation modeling or path analysis to examine the individual effects of each construct. Such an approach would provide a picture of both the strength and direction of how each construct impacts the outcome. Additionally, the interactions between constructs, as well as those characteristics which make up the constructs, all require deeper examination. Further analysis of the model constructs could yield interesting information for practitioners on which aspects are best emphasized through the learning community to help participants achieve job/major congruence.

Implications for Practice

Over the last two decades, learning communities have become ubiquitous on college campuses and institutions have invested considerable resources in these programs (Pike, 2008). This study adds to the larger body of research demonstrating that learning communities produce positive outcomes for participants (Taylor, 2003). Additionally, the findings from the current study have distinct implications for both institutions and for faculty and staff directors of learning community programs.

Institutional implications. The findings of this study that learning communities improve one's chances of achieving job/major congruence add to the long list of previous studies that demonstrate that these programs have important, positive effects on student participants (Barnett, et al, 2009; Blimling, 1993; Driscoll, et al, 2010; Inkelas, et al, 2007; Inkelas, et al, 2006; Inkelas & Weisman, 2003; Heiss, et al, 2008; Hotchkiss, et al,

2006; Lipson, et al, 2007; Lucas & Mott, 1996; Pike, 1999; Pike, et al, 1997; Smith &

Bath, 2006; Stassen, 2003; Tinto,1997; Tinto & Love, 1995; Tsui, 1998; Whalen &

Shelley, 2010; Zhao & Kuh, 2004). As a whole, these positive findings clearly provide

support for the idea that allocating resources to learning communities is well worth the

cost. Moreover, the current study indicates that learning community participation may

provide benefits beyond the student experience and well into the alumni years.

Institutions are encouraged, however, to conduct campus-level studies that delve more

deeply into the impacts of particular learning community programs. It is entirely possible

that the programs included in this study are unique and the results may not generalize to

all institutional settings. Additionally, as noted in the qualitative findings, even the

learning communities included in this study differed somewhat in regard to the level of

focus on disciplinary skills and active learning pedagogy. Campus-level studies may

provide more detail to administrators on which programs are more effective than others,

as well as elucidating those structures and approaches that best support the intended

outcomes of each learning community.

Institutions may also want to utilize the findings from this study and other

learning community research to promote these programs to students and their families.

Interestingly, marketing materials for the programs included in this study fail to cite

either national or campus-level studies on the positive impacts of learning communities

(institutional documents, 2011). Rather, the programs publicize their community

dimension- that students will make strong connections with faculty members and their

peers. Given the strong interest in job attainment that current students have (Franke, et al,

2010; Pryor, et al, 2011), I think many students and parents would be interested to know

that learning community participation can improve a student's chances of finding a job that is congruent with his or her major.

Finally, this study indicates that students from underrepresented groups and those who enter the university as undecided are less likely to achieve job/major congruence after graduation. Institutions may want to put more resources into providing support for these students in regard to the career choice process. As noted by Tracey and Robbins (2005), underrepresented students may face perceived or overt discrimination in regard to careers. Additional career programming may help students from underrepresented groups overcome these challenges. For undecided students, Holland's (1997) theory indicates that individuals need multiple exposures to occupations, interests, and skills in order to achieve congruence. Again, additional career programming targeted at undecided students may help increase their chances of achieving job/major congruence. Finally, given that learning community participation increases one's chances of securing a job that is congruent with his or her major, institutions may want to specifically encourage students from underrepresented groups and undecided students to participate in learning communities with the understanding that the experience may improve career success for these students after graduation.

Additionally, given the fact that learning community programs continue to impact participants even after they graduate, institutions may want to share participant data with alumni relations offices. As noted in the research section above, institutional satisfaction and engagement have distinct outcomes for alumni giving and participation (Monks, 2003). Thus, alumni relations offices may want to specifically target those alums who

140

participated in learning community programs. These individuals may be more likely to contribute their time and resources to campus endeavors. In order to do so effectively, it is essential that the alumni relations office at an institution work directly with learning community programs to share data such as contact information. In turn, the learning community programs could utilize such data to enhance their own programs by having stronger ties to alumni who graduated from the learning community. Institutions would be well-served in having dynamic databases which can be shared by multiple users for distinct purposes in tracking and engaging alumni.

Implications for directors. For faculty and staff directors of learning communities, the findings from this study help confirm that their programs are having positive effects on participants, even after they graduate. Interestingly, none of the programs included in this study explicitly state in their mission that they assist students in achieving career goals. Each program is much more focused on introducing the student to a particular discipline or way of thinking about a disciplinary topic. Yet, the findings from this study indicate that the programs seem to be playing an important role in shaping students' career choices. Given that disciplinary-based learning communities play an academic socialization function, it is not surprising that participation in such a program would result in distinct career outcomes like job/major congruence. Knowing this, the faculty directors of such programs may want to incorporate a greater focus on careers or make these aims more explicit.

Only a few of the learning communities included in this study host specific career events with alumni or professionals in the field. At these events, the professionals speak

about their occupations and try to make connections to course material. The faculty directors who incorporated such programs noted that they are well attended and support the general goal of contextualizing classroom learning into real-world situations. The other learning communities in this study may find that incorporating such programming into their repertoire may enhance the experience for their participants. Moreover, disciplinary-based learning communities at other institutions would certainly benefit from having explicit career programming built into the overall structure of the program given the important role these programs play in socializing students toward academic disciplines.

Beyond career programming, disciplinary-based learning communities would benefit from stronger ties to alumni and professionals in careers related to the particular discipline of the program. Only one of the learning communities in this study has strong ties to alumni and professionals. Not only do these connections to the professional world enhance career programming, but they also provide insight to the program director on how to best shape classroom projects and learning. This program has first-hand knowledge of current trends and emerging challenges within its discipline because of these strong connections to industry. Other disciplinary-based learning communities would benefit greatly by following the lead of this program and creating stronger ties to alumni and professionals within their respective fields.

Summary

The significance of the current study cannot be overstated. Though the findings are slight, no known research has been conducted on learning communities using Holland

as a lens. The academic socialization function seems to be an important component of how these learning communities work. Moreover, little research has looked at how learning community programs impact career or alumni outcomes. The current study opens the door to further research on both these fronts. In addition, the findings have important implications for both institutions and directors of such programs. Given the lengths that colleges and universities have gone to in creating and maintaining learning communities, it is good to see that these programs are impacting students positively after they graduate. Colleges and universities and program directors can utilize these findings to further shape how learning communities are structured. More emphasis on careers and occupations may strengthen the impact of these programs further. The current study represents an important first step in a new direction for learning community research.

As a final note, I return to the concerns voiced by many (Arum & Roksa, 2011; Boyer, 1987; Grubb & Lazerson, 2004; Lazerson, 2010; Schneider, 2005) on the increasing vocationalism of higher education. Though this study focuses on an occupational measure of attainment, the structures and practices employed by learning communities in many ways transcend the vocational function of higher education. Lazerson (2010) notes that an increased emphasis on vocational outcomes in higher education has resulted in: an emphasis on disciplinary skills over theoretical learning, a distinct lack of attention to student learning, and the complete separation of student and faculty life. Interestingly, it appears that the learning communities in this study directly combat these trends. The disciplinary skills most frequently cited in the interviews with faculty directors such as critical thinking and sense-making go well beyond discipline. Moreover, with their emphasis on active learning pedagogy, these programs certainly

show great concern for student learning. Finally, the program directors clearly have a strong awareness of students' lives outside the classroom environment. Though Lazerson (2010) contends there is no silver bullet for combating the vocationalism of higher education, I would argue that this study lends support to the idea that learning communities may be a good start.

APPENDIX A

Learning Community Program Director Semi-Structured Interview:

INTRODUCTORY STATEMENT:

Thank you for your willingness to participate in this interview which will focus on the activities and pedagogical approaches that are used in your learning community to help achieve your program's mission. These activities may take place formally or informally; within or outside the classroom. I will be asking you a series of questions about your program and may follow up with further questions in order to provide clarity and depth to your responses. If any question seems unclear, is hard to answer, or doesn't make sense, please let me know and I will try to rephrase. Do you have any questions before we start?

1)   For which Learning Community Program do you serve as academic director?

2)   What is the primary disciplinary focus or theme of your Learning Community Program?

3)   Does your Learning Community Program have curricular requirements? (Curricular requirements are defined as for-credit classes that students must complete in order to participate in/graduate from your program).

4)   If yes, how many courses must students complete in order to finish your Learning Community Program?

5)   How many faculty members teach the required courses in your Learning Community Program?

6)   How long is your Learning Community Program (i.e. how many semesters does it take a student to complete the program)?

7)   At what year (e.g. Freshman, Sophomore, etc.) do students begin your Learning Community Program?

8)   Does your learning community have a residential component?

9)   How many years has your program been in existence?

10)   What is the average size of a cohort?

11) This study is about learning communities. How would you define the term learning community?

12) In your own words, please describe the goals or mission of your learning community program.

13) Can you provide examples of how you achieve those goals or that mission?

    PROBE) You mentioned the following examples ____, ____, _____, etc. For each example can you indicate whether that activity is required or voluntary and whether that activity takes place in the classroom or in some other venue?

Example Provided	Required/Voluntary	In-class, Outside of class

14) According to the intake form you filled out a few moments ago, you indicated that your program focuses on the following theme or discipline: _____. What skills, abilities, or competencies are most needed for academic and career success in this field?

PROBE) You mentioned the following skills were important in this field ____, ____, ____, etc. Does your program specifically attempt to help students develop these skills? And, if so, how do you address them? I will go through each skill you mentioned.

Skill	Explicitly Addressed (Y/N)	How Addressed

PROBE 2) It sounds as if the skills you mentioned are primarily addressed in the classroom (outside the classroom). Do you address these skills outside the classroom (inside the classroom) at all? How?

Skill	How Addressed 2

Next, I'm going to ask you about educational techniques that you utilize in the classroom. For these questions please consider those courses which are curricular requirements for your program.

15) When teaching courses for this program, what classroom techniques do you or the other instructors in the program utilize in order to convey the material? Examples of classroom techniques might include: lecture, small group discussion, simulations, or additional techniques designed to teach material in a classroom setting.

PROBE) You mentioned the following techniques ____, ____, ____, etc. How often do you rely upon these techniques in the classroom?

Technique	Frequency

PROBE 2) In addition to the techniques you just mentioned, some instructors also use (lecture, small group discussion, simulations, labs, games, case studies, reflective writing, self-assessment, debate, role-playing, peer teaching, field studies). Have you ever utilized that technique in your program? If yes, how often? (Repeat as necessary).

Technique	Frequency

16) Do any of the courses in your program explicitly address careers or occupations that are typically associated with your program's theme or discipline? Once again, I am specifically asking about topics that come up within a classroom setting.

IF NO, SKIP to Q6

If YES, PROBE) In what ways do you explicitly address careers or occupations?

PROBE 2) In addition to the ways you just mentioned, some learning community programs address careers or occupations by (guest speakers, panel of professionals, visit by career services staff, career assessments, alumni/professional mentoring, writing assignments). Have you ever utilized this approach?

17) In addition to classroom activities and learning, many programs such as yours rely on activities that take place outside the classroom. What kinds of activities does your program offer for students outside the classroom?

PROBE) You mentioned the following activities: ____, ____, ____, etc. How often do these activities occur in your program?

Activity	Frequency

PROBE 2) In addition to the activities you just mentioned, some learning community programs offer (field trips, study abroad trips, social gatherings, networking events, guest speakers/lectures, workshops, competitions, community service activities). Have you ever utilized that activity in your program? If yes, how often? (Repeat as necessary).

Activity	Frequency

18) How much contact do you (and/or the other faculty who teach in your program) have with students outside the classroom?

PROBE) When you (and/or the other faculty who teach in your program) have contact with students outside the classroom, what are some typical topics that are discussed?

PROBE 2) In addition to the topics you just mentioned, some faculty might talk to students about (their social life, academic concerns, career/professional goals, course material, emotional/personal issues, study skills). Is this a typical conversation you (and/or the other faculty who teach in your program) might have with a student in your learning community program?

PROBE 3) In your opinion, do you (and/or the other faculty who teach in your program) have more contact with students in your program than faculty not associated with a learning community program?

19) On the intake form you noted that your cohort size is __. Is there a rationale behind this cohort size?

20) Do you follow up with participants after they have completed the program?

IF NO, SKIP to Q11

If YES, PROBE) How do you engage students once they have completed your program?

21) Do you follow up with participants after they graduate? If yes, how?

IF NO, PROBE) Are there reasons why you do not engage alumni who have completed your program?

If YES, PROBE) How do you engage students once they have completed your program?

22) Is there anything else you would like to share about your learning community program?

Summary of Learning Community Programs

Disciplinary Focus	# of Courses Required	Enter as	Residential*	Cohort Size	Focus on Disciplinary Skills	Focus on Active Learning Pedagogy	Co-Curricular Activites	Level of Faculty Contact #
American Studies	4	Freshman	Yes	60	Low	Medium	Yes	higher
Biology	4	Freshman	Yes	90	Medium	Medium	Yes	higher
Creative Writing	4	Junior	Yes**	25	High	Medium	Yes	higher
Astronomy	4	Freshman	Yes	70	Low	Medium	Yes	higher
Humanities	4	Freshman	Yes	50	Low	Low	Yes	higher
Earth Science	4	Freshman	Yes	70	Medium	Medium	Yes	same
Environmental Science	4	Freshman	Yes	60	Medium	Medium	Yes	same
Education/Human Development	4	Freshman	Yes	80	Low	Medium	Yes	higher
Systems Engineering	10	Sophomore	No	65	High	High	Yes	higher
Research Methods	10	Freshman	Yes***	200	High	High	Yes	higher
International Studies	4	Freshman	Yes	65	Low	Medium	Yes	same
Media Studies/Journalism	4	Freshman	Yes	70	Medium	Medium	Yes	higher
Business	4	Freshman	Yes	70	High	High	Yes	higher
Arts	4	Freshman	Yes	70	Low	Low	Yes	same
Leadership	4	Freshman	Yes	70	Low	Medium	Yes	higher
Engineering	4	Freshman	Yes	70	Medium	Low	Yes	higher

* Unless otherwise noted, students are encouraged but not required to live in learning community
** Participants are required to live in learning community
*** Participants are required to live in learning community for first year only
# Compared to their experience prior to becoming a program director

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