CHAPTER I

INTRODUCTION

Since 1990, the population of the United States has grown 13%. The population is currently estimated to be 281,421,906, with males and females composing 49% and 51% of the population respectively (US Census Bureau, 2002). Of this figure, approximately 211 million (75%) are White and 34 million (12%) are African American. The enrollment in the American higher education system is composed of students from a variety of racial and ethnic backgrounds. According to Nettles and Perna (1997) institutions of higher education enroll approximately 14,500,000 undergraduate students. White students represent 71% of the total enrollment, with African American students comprising only 6% at Predominately White Institutions (PWIs).

Since the passage of the Civil Rights Act of 1964 and the Bakke decision of 1978 there has been a substantial increase in African American enrollment in higher education in the past 40 years. However, African American students are not represented in higher education in numbers proportionate to their representation in the general population. With increasing numbers of students coming from historically underrepresented groups, researchers have begun to turn their attention to the relationships between institutional characteristics and racial composition by researching student involvement, faculty involvement, and educational gains (Nettles & Perna, 1997; Watson & Kuh, 1996).

Investigators have asserted that the transition to college can be both a devastating and a challenging experience, particularly for African American students in engineering fields at PWIs (Amenkhienan, 2000; Good, Halpin, & Haplin, 2002; Graham 1997; Hrabowski & Maton, 1995; Hrabowski & Pearson, 1993; Moore, 2000; Morning &
Fleming, 1994). Even though African Americans are going to PWIs at a higher rate than in the past, they tend to have lower grade point averages and retention rates than their White counterparts (Flowers & Pascarella, 1999; Nettles, 1988; Nettles & Perna, 1997). Research suggested that a significant portion of the African American student population who attended PWIs left by their sophomore year in college (Cokley, 1999; Jackson, 1992; Nettles, 1988; Nettles & Perna, 1997; Tinto, 1993). As a result, the increasing rate of student attrition for African Americans at PWIs is a growing concern and research interest. This high attrition is particularly significant for African Americans in engineering programs nationally.

Several studies have found that minority students on PWIs campuses had higher alienation scores and dropped out more often in engineering than White students (Amenkhienan, 2000; Good, Haplin & Haplin, 2002; Hrabowski & Pearson, 1993; Moore, 2000; Morning & Fleming, 1994). Nationally, Whites comprise 73% of the degrees conferred in engineering while African Americans only represent 5%. At PWIs an even lower percentage (4%) of African Americans are graduating with engineering degrees (National Center for Educational Statistics (NCES), 1999). The low graduation rates nationally and high student attrition in engineering programs is perceived as a threat to the national economy (Amenkhienan, 2000; Landis, 1991; Levin & Wyckoff, 1995; Moore, 2000).

Allen (1985) found the attrition rate of African American College students to be five to eight times higher than Whites. For African American students at PWIs, environmental characteristics of the institution such as faculty interaction, campus environment, and academic support programs were critical for retention, persistence, and
academic success (Cokley, 1999; DeSousa & Kuh, 1996; Moore, 2000; Nettles, 1988; Sedlacek, 1987; Watson & Kuh, 1996). Hence, it is essential that PWIs establish support programs and interventions to cultivate environments that are conducive for all students. These facts have led many universities to reevaluate and create programs designed to recruit, retain, and graduate under-represented minority students.

The College of Engineering at Virginia Tech, like comparable engineering schools, has its challenges as it relates to the academic environment, minorities, and retention. The Virginia Tech undergraduate engineering student population is approximately 4,756. The percentage of Whites enrolled in engineering is 77% while African Americans comprise only 4%. In the year 2001, 962 engineering degrees were conferred from the College of Engineering. Of those degrees 3% (29) were awarded to African American students and 84% (812) to White students (Office of Minority Engineering Programs (OMEP), 2001).

Academic Advising

Researchers have found that academic advising plays a significant role in the education and retention of African American students in engineering at PWIs (Burrell & Trombley, 1983; Good et al., 2002; Levin, & Wyckoff, 1995; Moore, 2000; Morning & Fleming 1994). Academic advising is one of the best vehicles for promoting the intellectual, personal, and social development of students. Academic advisors can help retain students by providing guidance and positive influences for students (Burrell & Trombley, 1983; Crockett, 1985; Crookston, 1972; Tinto, 1987).

"Academic advising is a systematic process, based on student-advisor relationships, conceived to aid students in achieving academic goals, career goals, and
personal goals" (Ender, Winston, & Miller, 1984, p.19). It impacts the lives of the students' as well as institutional welfare (Crockett, 1985). The high attrition rate for African Americans in engineering colleges nationally and at Virginia Tech, makes quality advising imperative (Morning & Fleming, 1994).

A salient variable for African American students attending PWIs is a strong support system or person (Herndon, 2001; Moore, 2000; Sedlacek, 1987; Tan, 1995). Thus academic advising is seen as a critical service for their development as well as for their retention. However, few studies inquired into the extent to which African American students are receiving the kind of advising they prefer in engineering. Burrell & Trombley (1983) found that there is a significant difference in the advising needs of African American students than White students. The study surveyed 542 minority (96% African Americans) students on five different PWIs. Their findings revealed that African Americans students were dissatisfied with academic services as well as dissatisfied with the paucity of African American faculty. However, little research has focused specifically on the needs of African American students in engineering compared to White students.

The quality of academic advising plays a critical role in students' retention and satisfaction (Crockett, 1985; Crookston, 1972; Ender et al., 1984). One of the more important resources for students is having a role model, who can be a faculty member, an administrator, an academic advisor, or another individual the student looks up to and regularly interacts with. (Davis, 1991; Herndon, 2001; Sedlacek, 1987; Tan, 1995). Typically, faculty, administrators, and other student affairs professionals assume that the
advising needs and preferences for advising styles are similar for all students and do not vary in relation to specific student profiles or ethnicity (Herndon, 1993).

Social adjustment and interpersonal climate seem to be central factors in many African Americans’ satisfaction and success on predominantly White campuses (Nettles, 1988). It is important that faculty advisors understand how these issues operate in order to develop effective interventions for these individuals (Schwitzer, Griffin, Ancis, & Thomas, 1999). Levin and Wyckoff (1995) state that academic advising in engineering focuses only on course requirements for specific engineering majors and pays little attention to individual interest, ability, and overall appropriateness. In other words, the researchers often perceived academic advising in engineering as not being student-centered.

There are two contrasting behavioral styles that show how academic advisors can interact with their students. Crookston (1972) reported that there are two advising styles—prescriptive advising and developmental advising. Prescriptive advising is primarily focused on formal academic matters and developmental advising reflects a concern for the student’s total education. Prescriptive advising is defined as a program-focused activity in which the advisor dispenses information to the student and monitors progress. Developmental advising expands the role of the advisor to include a full range of resources such as life and career planning, decision-making skills, and mentoring through personal involvement with the student (Crookston, 1972; Winston & Sandor, 1984a).

Research indicates that the developmental advising approach is believed to best serve the needs of American college students (Crockett & Crawford, 1989; Herndon, 1993; Herndon, Kaiser & Creamer, 1996; Winston & Sandor, 1984a; Winston & Sandor,
Developmental advising enhances students' total development by addressing their intellectual, social, and personal needs. Limited research has been done to assess the relationship between student characteristics and special advising needs in engineering. Several studies have investigated African Americans' preference for encouragement and support but failed to identify student preferences for advising styles in a technical major like engineering. This study will investigate the expectations and perceptions of engineering students on the prescriptive-developmental advising issue.

Statement of Problem

The problem for this research is that there are no studies that have examined the current incidence and preference of advising styles for African American students in engineering and subsequently how these compare to their White counterparts. Evidence presented has shown that African American students experience academic difficulty in engineering and attain the baccalaureate degree at rates much lower than Whites. However, we do not have evidence of African American students' preferences for and perceptions of academic advising, nor do we know the preferences and perceptions of Whites, a more traditional group of students in the College of Engineering.

Purpose of Study

The purpose of this study is to examine the incidences and preferences of academic advising for both African American and White students in engineering. Specifically, the researcher will examine the current perceptions and desired preferences for prescriptive or developmental advising. This research may add a new perspective to the understanding of the advising process and may have implications for academic achievement and retention of students in engineering programs.
Research Questions

This study is to determine; (a) the current advising African American and White students in the College of Engineering at Virginia Tech are perceiving; prescriptive versus developmental; and (b) what the preferences are for advising of African American and White students in engineering; prescriptive versus developmental. This study will specifically examine the comparison between race, gender, classification, grade point average (GPA), and major. This study addressed the following research questions:

1. What is the difference between the kind of advising engineering students are currently perceiving based on race, gender, classification, GPA, and major? (Prescriptive or Developmental)

2. What is the preference for advising for engineering students based on race, gender, classification, GPA, and major? (Prescriptive or Developmental)

Hypotheses

1. There is no significant difference between the style of academic advising currently perceived by African American and White engineering students.

2. There is no significant difference between the style of academic advising that African American or White engineering students prefer.

Rationale of Study

African Americans comprise 12% of the overall U.S. population (US Census Bureau, 2002). In higher education enrollment of African Americans is 6% at PWIs (Nettles & Perna, 1997). These percentages begin to decrease when you look at African Americans enrollment nationally in technical majors such as engineering (Hrabowski & Maton, 1995; Nettles & Perna, 1997). At Virginia Tech, African Americans in
engineering represent only 4% of the student population and are graduating at an even lower rate (3.0%). The percentage is even lower (0.7%) for African American females graduating (OMEP, 2001).

Previous research has indicated that African American students are more prone to drop out (Amenkhienan, 2000; Crockett, 1985; Herndon, 2001; Moore, 2000; Sedlacek, 1987; Tinto, 1987). Student attrition has become a major problem facing African Americans in technical fields like engineering (Hrabowski, & Pearson, 1993; Landis 1991; Morning & Fleming, 1994; Tinto, 1987). Research that centers on key components to improve student retention is important and timely in higher education today. The quality of academic advising plays an important part in students' retention and satisfaction (Burrell & Trombley, 1983; Crockett, 1985). The high attrition rate of African Americans in the engineering colleges both nationally and at Virginia Tech makes it critical to investigate what could be done to increase retention. This study will shed light on the current advising and preferences of African American students compared to their White counterparts.

It is important that faculty members and academic advisors are knowledgeable about the academic advising needs of African American students in engineering. The lack of awareness of academic advising preferences could be a major component in the high attrition of African American students in the College of Engineering at Virginia Tech. By studying this unique population compared to a traditional group of engineering students, a greater understanding of the special advising preferences of both groups may result. Furthermore, advisors could develop more effective strategies when advising both groups of students. Previous studies about African American students' advising needs in
an engineering environment are practically nonexistent. Colleges and universities stand to profit from a synthesis of research findings associated with the improvement of academic achievement of African Americans in engineering.

Advisors may benefit from this study. The results could provide them with information regarding the advising currently received and preferred by both African American and more traditional undergraduate students in engineering. Furthermore, additional information could be obtained regarding the current and preferred advising styles related to race, gender, major, classification, and grade point average. The findings from this study may also aid in the development of instructional and social advisory models related to improving academic achievement for all students in engineering. Such models would complement existing literature related to academic success and achievement in higher education. Moreover, increased awareness, and understanding of advising preferences could result in increasing: (a) current advising services; (b) student willingness to interact with advisors; (c) student satisfaction; (d) retention; (e) graduation rates; and (f) future employment for African American student in engineering.

Limitations

1. This study lacks a qualitative component of research.
2. This was not a national study. The research was limited to only undergraduate students in the College of Engineering at Virginia Tech.
3. The survey administered in this study has not been updated since 1986.
Definition of Terms

The following definitions listed below identifies and defines the key terminology and concepts that are used in this study:

1. Academic advising refers to an interactive process in which the adviser helps the student set and achieve academic goals, acquire relevant information and services, and make responsible decisions consistent with interests, goals, abilities, and degree requirements (Ender et al., 1984; Winston & Sandor, 1984a)

• Developmental advising refers to an advising model in which students seek out academic information from their advisor and gradually develop self reliance in the use of degree requirements, resources and information, so they can make better decisions about their majors, minors and potential careers. The advisor and the advisee collaborate with one another and the student sees the advisor as a resource of equality (Crookston, 1972; Winston & Sandor, 1984a).

• Prescriptive Advising refers to an advising model that intends to provide as much information up front. Prescriptive advising focuses only on the requirements of academic performance (e.g. course registration and academic requirements) and not on the development of the student. The advisor has an authoritative relationship with the advisee (Crookston, 1972; Winston & Sandor, 1984a).

2. Academic advising at Virginia Tech refers to a collaborative process between student and advisor leading to the exchange of information that
encourages the individual student to make responsible academic and career decisions (Virginia Tech, 2002).

3. African American refers to people of African descent, who are born, reared and/or reside in the United States. African American and Black are often used interchangeably (Moore, 2000).

4. Engineering refers to the application of mathematical and scientific principles to practical ends, as the design, construction, and operation of economical and efficient structures, equipment and systems.

5. Historically Black Colleges and Universities (HBCUs) refers to four-year educational institutions in American founded for the specific purpose of educating Black or African American students, and where at least 90 percent of the undergraduate student population is composed of Black or African American students (Scott, 1995).

6. Predominantly White Institutions (PWIs) refers to an educational institution wherein at least 90 percent of the undergraduate student population, faculty, and staff are White Americans (Scott, 1995).

7. Preference refers to the act of choosing as more desirable. To want, have a need, like better or to show as ideal or favor toward something or someone.

8. White refers to Americans of European ancestry. White, Caucasian, and a more traditional group are used interchangeably.
Organization of the Study

The present study is organized in five chapters. Chapter One introduced the topic of the study, a statement of the problem, the purpose of the study, the research questions, the hypotheses, the rationale of the study, limitations, and the definition of terms. Chapter Two provides a review of the literature that is relevant to the present study. Chapter Three offers a description of the methodology that is employed in this study, including data collection and data analysis procedures. Chapter Four presents the overall results of the study, while the final Chapter Five discusses the results and their implications for future practice and research.