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Assessing Completion Rates of EMT-Basic Students Using the Self-Directed Search

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ASSESSING COMPLETION RATES OF
EMT-BASIC STUDENTS USING
THE SELF-DIRECTED SEARCH

by

Rod Hackwith

Bachelor of Science
University of Idaho
1987

a thesis submitted in partial fulfillment
of the requirements for the

**Master of Science Degree in Workforce Teaching and Learning
Department of Educational Leadership
College of Education**

**Graduate College
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ABSTRACT

Assessing Completion Rates of EMT-Basic Students Using the Self-Directed Search

by

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With shrinking budgets and a need to demonstrate accountability to legislatures and boards of higher education, retention rates of students have been utilized by institutions of higher education to demonstrate their effectiveness and value. The purpose of this descriptive, exploratory study was to determine if specific personality types as identified by the Self-Directed Search (SDS) were more successful in completing an EMT-Basic course at the local community. Secondary data, collected as a pilot for the purpose of improving program retention, was based on information gathered from students (n=47) enrolled in an EMT-Basic class over the course of one semester where success rates were tracked in accordance with each students' occupational code as determined by the SDS. Social (S) and Realistic (R) types were the most predominant Holland code pairing and this group of students had a significantly higher pass rate than other codes of this group.

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CHAPTER 1

INTRODUCTION

In 1966, the National Academy of Sciences published a paper entitled *Accidental Death and Disability: The Neglected Disease of Modern Society* that outlined the need to care for injured motorists on the nation's highways (Department of Transportation, 1996). This document led to the Highway Safety Act of 1966 that provided legislative authority and financial backing for a new industry termed Emergency Medical Services (EMS). It was at that time the concept of the emergency medical technician (EMT) was created due to this identifiable need for emergency trauma care (Department of Transportation, 1996).

Since that time, the development of three discernable training levels have been formed by the National Highway Traffic and Safety Administration (NHTSA), to include, EMT-Basic, EMT-Intermediate and Paramedic. The EMS industry continues to be heavily regulated by the federal government, although the federal government relinquishes that control to state and/or local agencies. In Clark County, Nevada, regulation of the EMS industry has been assigned to the county health district.

Although the scope of practice of EMS providers may differ amongst state and local agencies, in general, an EMT-Basic is trained to perform the following skills:

- Basic airway management
- Cardiopulmonary resuscitation

- Splinting of fractures
- Spinal immobilization
- Administration of basic medications such as oxygen, oral glucose and aspirin. (National Highway Traffic Safety Administration, 2007, p. 29-30)

The EMT-Intermediate and Paramedic are trained to perform progressively more complicated and more invasive skills including esophageal and/or endotracheal intubation, ECG interpretation, advanced airway management, intravenous (IV) therapy (National Highway Traffic Safety Administration, 2007) and an array of emergency medications that range from five or six for an EMT-Intermediate to greater than thirty medications as a Paramedic. Once again, the scope of practice of EMT-Intermediate and Paramedic providers will differ amongst state and local agencies.

The College of Southern Nevada offers all three levels of training within the EMS industry that range from one to three semesters in length. The EMT-Basic and EMT-Intermediate class are each offered as a one semester course; however, each course is comprised of multiple classes. For example, EMS 108B, EMS 108L and EMS 150B are the three classes required by the College of Southern Nevada to complete the EMT-Basic course (lecture, laboratory and clinical courses respectfully). All three courses must be taken concurrently during the same semester and total nine college credits, with a total of 166 clock hours (College of Southern Nevada, 2008b, p. 302). Upon completion, the EMT-Basic course is the first level of certifiable training in which individuals can obtain employment within the field of emergency medical services (EMS) and happens to be a prerequisite for individuals in our county who are interested in applying for entry-level employment with all local fire departments.

The EMT-Basic courses at CSN is capped by the program at 24 students per lecture section, while the laboratory sections are capped at six students per section to maintain the recommended student to instructor ratio of 6:1 as specified by the *EMT-Basic: National Standard Curriculum* (Department of Transportation, 1996). The College of Southern Nevada (CSN) typically offers seven or eight sections of EMT-Basic classes for an average total of 178 students each semester. According to EMS program statistics, since 2004 the classes have started at approximately 97% capacity (Hackwith, 2008). At the conclusion of each course, students who have successfully met all cognitive, psychomotor and affective domain objectives are placed on a course completion record mandated by the Southern Nevada Health District Office of EMS and Trauma Services (SNHD OEMSTS) office and become eligible to take the national certification exam. Students whose names appear on the course completion record must have passed the course with a percentage grade of 80%, completed 56 hours of clinical rotations at hospitals and fire-rescues and completed all psychomotor skills listed throughout the *EMT-Basic: National Standard Curriculum* and the SNHD OEMSTS.

Demand for EMS jobs has been high both locally and nationally for many years. The U.S. Department of Labor projects EMS jobs to grow faster than average through 2012 (Bureau of Labor Statistics, 2004) nationally and local agencies are testing regularly to keep pace with demand. Local fire department positions are highly competitive with many more applicants than available positions. EMS faculties have reported that most of their classes are comprised of individuals who are taking the course for the primary purpose of future application to a local fire department.

Statement of the Problem

Between the fall 2005 semester to the conclusion of the spring 2008 semester, completion rates of the EMT-Basic class have been tracked and documented by the program administrator. This completion rate averages around 54.6% (see Table 1). Prior to 2005, retention rates were not kept by the faculty for any of the EMT courses; however, anecdotal comments by experienced faculty members make reference to similar completion rates (Cassell & Kerney, personal communications, 2007).

Table 1.

CSN EMS 108B Enrollment and Completion Figures

Semester	Initial Enrollment (n)	Completed (n)	Percent
Fall 2004	182	101	55.5%
Spring 2005	154	80	51.9%
Fall 2005	199	123	61.8%
Spring 2006	181	96	53.0%
Fall 2006	201	90	44.8%
Spring 2007	150	75	50.0%
Fall 2007	189	118	62.4%
Spring 2008	201	115	57.2%
		Mean	54.6%

Source: College of Southern Nevada EMS Program Data

EMS faculty members have tried to understand the issues related to attrition and ways of increasing retention in the series of courses at this level of training. In

discussions about possible reasons for attrition, the faculty theorized that low completion rates are probably due to (1) a lack of understanding by the student of the depth and breadth of material presented in class, (2) the significant amount of time to complete mandatory hospital and ambulance clinical rotations, and (3) the financial requirements of the course (Cassell & Kerney, personal communications, 2007). An additional issue is a perceived overall lack of commitment by many students who are taking the class only as a means to apply for the fire departments and not because they have an innate desire to become EMS providers. In an attempt to decrease this perceived lack of understanding by the students, an EMS orientation has been offered since spring 2005 prior to each semester to inform the students of the classroom, clinical and financial requirements of the course. These orientations have had seemingly minimal impact on the completion rate and many late course enrollees do not participate in the orientation. All information presented at the EMS orientation is again reviewed on the first day of class for any student who may have missed the orientation, and it is also provided in the course syllabus or advisory paperwork provided to the student.

The Need for Program Improvement

Prior to the fall 2004 semester, the CSN EMS faculty began to discuss the need to reduce attrition in their EMT courses. One area of particular interest for the faculty was to better understand the reasons why the high number of students were dropping or failing out of the EMT-Basic course. Faculty already had accepted that an estimated 50% fail rate was unacceptable and that improvements to retention had to be made. Other related issues also became apparent at this time, including a low hire rate of CSN students

at one local EMS agency (Carlo, personal communications, 2004) and a lower than expected pass rate on the state certification examination (Hackwith, 2008). It became obvious that changes to the program had to be made, which included an aggressive campaign to improve state certification scores and increase student graduate hiring rates through curriculum review and improving communication to future students to inform them of the necessary academic rigor of the course through student orientations and advising paperwork.

While the curriculum review and modifications had an impact on student hiring practices by local agencies (Carlo, personal communications, 2005), pass rates of the state examination became difficult to assess as a number of changes occurred to the certification examination process. In the summer of 2005, the Nevada state EMT-Basic examination was re-written and then 18 months later, the State of Nevada adopted the National Registry of EMT's (NREMT) as the state's EMS certification exam provider. Despite changes to the state exam and the adoption of a nationally validated certification examination, pass rates of the EMT-Basic classes did not improve (Hackwith, 2008).

To improve completion rates, the EMS faculty began to look at the problem from an entirely different perspective-evaluating the possibility of mandating a pre-class assessment tool to determine the academic readiness of the students registering for the class. After investigation into different academic preparation assessment tools and reevaluating the perceived needs, it was decided that the goal was not to evaluate academic preparation, but rather to evaluate whether or not a student's personality and vocational goals made a difference in course completion. Thus, the use of the Self-Directed Search (SDS) for the spring 2008 semester was implemented. Since budgetary

constraints limited the use of the SDS for all eight sections of EMT-Basic class, the decision was made by the program director to pilot the SDS assessment using two class sections and to later review the findings in order to determine if the assessment cost was warranted.

Purpose of the Study

The purpose of this descriptive, exploratory study was to determine if specific personality types and vocational choices as identified by the Self-Directed Search (SDS) were more successful in completing an EMT-Basic course at the local community college.

Significance of the Study

The findings of this study, while they were not generalize-able, should assist program administrators to determine the effectiveness of using the SDS as an indicator of potential student success in completing the EMT-Basic course. Additionally, the findings of this study may potentially assist in reducing costs associated with hiring additional instructors to handle the student load. Since the recommended student to instructor ratio is 6:1 in each of the EMT-Basic class sections and because there is currently a high attrition rate in each of those sections, the final ratio can be as low as 3:1; a costly expenditure given the current fiscal constraints in the Nevada System of Higher Education (NSHE). Although this may be beneficial for those students continuing with the course, it is hardly cost effective from an administrative perspective. If students who are not likely to complete the EMT course can be identified prior to the start of the

course, fewer courses may be offered, thus requiring fewer instructors and spending less on supplies and equipment.

Research Questions

The following research questions were used to guide this study:

1. Which Holland code is most prevalent amongst EMT-Basic completers at the College of Southern Nevada?
2. What is the completion rate of students in the EMT-Basic course with the specific EMS code of RSI and the firefighter code of RES as listed in the *Dictionary of Holland Occupational Codes* (Gottfredson & Holland, 1996)?

Theoretical Framework

Dr. John Holland introduced his theory of vocational choice in 1973 and then revised his original theory in 1985 and then again in 1997. Holland's theory maintains that most people are motivated to seek work environments which correspond to their dominant personality traits (1997). In his book, *Making Vocational Choices*, Holland (1977a) explains four "working assumptions" (p. 13) that describes his theory:

- 1) In our culture, most persons can be categorized as one of six personality types: Realistic, Investigative, Artistic, Social, Enterprising, or Conventional (RIASEC).
- 2) There are six model environments: Realistic, Investigative, Artistic, Social, Enterprising, or Conventional.

- 3) People search for environments that will let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles.
- 4) Behavior is determined by an interaction between personality and environment. (p. 2-4)

These four working assumptions indicate the nature of the personality types and environmental needs, how the types are determined and the interaction of each.

John Holland (1990) states that both people and occupations (environments) can be classified into six different types, which are summarized below:

- Realistic (R) - people who prefer realistic occupations and have mechanical and athletic abilities, enjoy working outdoors and like to work with tools and machines. The R type generally prefers to work with things rather than people. (p. 11)
- Investigative (I) – people who use mathematical and scientific abilities, enjoys working alone, likes to solve problems. The I type generally favors working with ideas more than with people or things. (p. 11)
- Artistic (A) – people who prefer artistic occupations and enjoy creating original work and has a good imagination. The A type usually enjoys working with ideas more than things. (p. 11)
- Social (S) – people who prefer social occupations and is interested in human relationships and likes to help others. The S type likes to work with people more than things. (p. 11)

- Enterprising (E) – people who have leadership and speaking abilities and like to be influential. The E type likes to work with people and ideas more than things. (p. 11)
- Conventional (C) – people who prefer conventional occupations and have clerical and arithmetic abilities and good organizational skills. The C type enjoys working with words and numbers. (p. 11)

Posing a variety of questions and experiences, the Self-Directed Search was developed by Holland to be used as a tool for career exploration in order to help individuals identify their personality and vocational type by the creation of a code. This three-letter code is created by answering “Yes” or “No” to statements in the areas of Activities, Competencies, and Careers (Holland, 1990, p. 4-9). For example, using the *Self-Directed Search Assessment Booklet: Form CP*, an individual will answer whether or not he or she likes or dislikes to, “Work on a car” or “Read scientific books or magazines” or “Act in a comedy or play” or “Write business letters” (Holland, 1990, p. 4-9).

Based upon one’s answers, the three-letter code becomes indicative of the personality type and environment in which an individual will have the greatest likelihood of high job satisfaction. For example, a three-letter code of CEI would indicate an individual who resembles most the Conventional (C) type, with less resemblance of the Enterprising (E) type, followed thirdly by the Investigative (I) type. The individual would then use his or her code of CEI to find the corresponding list of potential career options as listed in the *SDS: Careers Options Finder* (Holland, 2001) or the *Dictionary of Holland Occupational Codes* (Gottfredson & Holland, 1996). As stated by Holland

(1990) in the *Self-Directed Search Assessment Booklet*, “The Self-Directed Search is an interest inventory designed for career exploration and planning” (p. 3). However, he cautions that the SDS should only be used for counseling purposes, and should not be used for specific career decision-making.

As part of his theory, Holland (1990) states that the higher the score on any particular scale, the more closely an individual resembles that type and the stronger the interests are in that particular area (p. 11). Holland (1997) also states that individuals with a particular type will perform better in the environment which corresponds with their personality type (i.e. Realistic types will perform better if they are placed in a Realistic environment). Holland calls this phenomena “congruence” (p.4). Holland created his hexagonal model to help illustrate the relationships of the six different personality types (see Figure 1). The lines on the model indicate the similarity or differences between the different personality or environmental types. Holland (1997) explains the model by stating, “The relations among types, or the psychological resemblances among types, are assumed to be inversely proportional to the distances among types shown” in the model (p. 34). For example, Enterprising and Social personality types are placed next to each other on the bottom two points of the hexagon, therefore, they are similar in their profile. In contrast, Social and Realistic personalities would share incongruent tendencies as they are placed on opposite points of the hexagon. Incongruence occurs when a personality type lives or works in an environment that provides opportunities and rewards foreign to that person’s preferences and abilities (Holland, 1997).

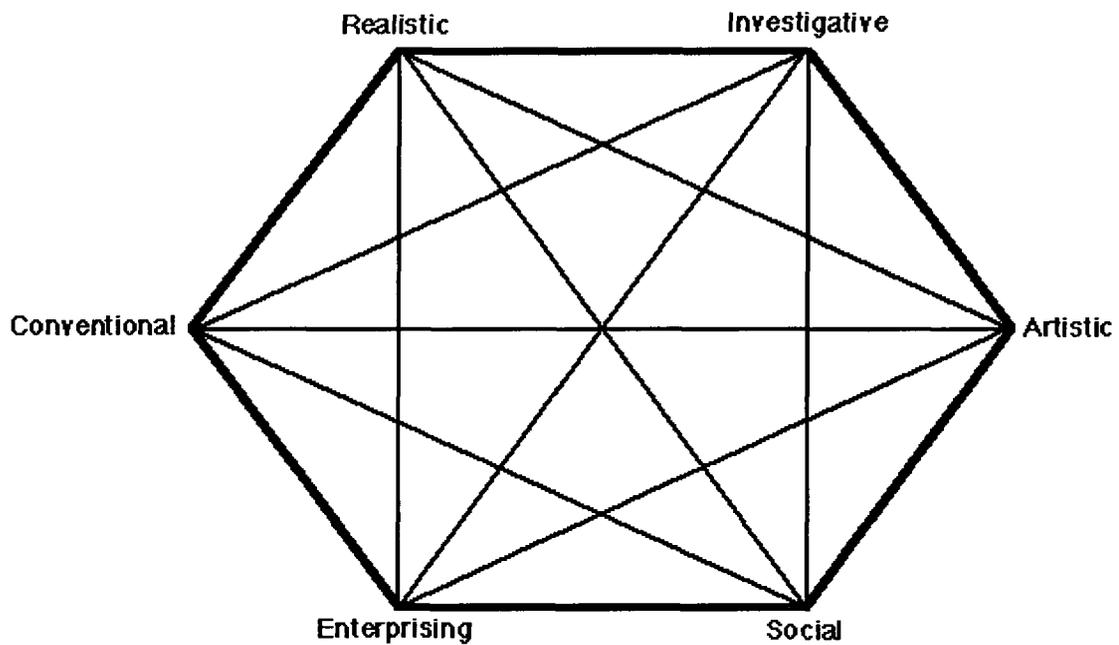


Figure 1: *Holland's hexagonal relationship or occupational classes model*. Adapted from Holland, J. L., Whitney, D. R., Cole, N.S., and Richards, J. M. Jr. (1969). An empirical occupational classification derived from a theory of personality and intended for practice and research. ACT Research Report No. 29. Iowa City: The American College Testing Program. Retrieved June 16, 2008 from <http://faculty.tamuc-commerce.edu/crrobinson/512/Hexagon.htm>

Differentiation is defined as “the degree to which a person or an environment is well defined” (Holland, 1997, p. 4). In other words, when scoring the SDS, the more dominant one personality type or environment is, the more likely that person will find greater satisfaction within that particular environment and are more differentiated. Students who do not have a dominant environment or personality type, but instead have two or three similarly scored environments are “less differentiated or undifferentiated” (Holland, 1997, p. 4). These individuals tend to resemble many types to the same degree and have what Holland refers to as a “flat profile” (1997, p. 33). This means that the individual does not have one particular personality profile or environment in which the person will thrive, making discourse more likely and increasing the likelihood of job

dissatisfaction. At times, there is such a close relationship between similar three, letter codes that although an individual may find RSI to be their primary Holland code, the person may also be directed to another, similar secondary code (RIS) when using the *Career Options Finder* (Holland, 2001, p. 3).

Consistency relates to the degree of relationship that each environment or personality has to do with each other. When applying this term to Holland's hexagon, the closer the two points are on the hexagon, the more related the two environmental types will be. Using the same example as above, since Enterprising and Social environmental types are placed next to each other on the bottom two points of the hexagon, the theory is that they will share more personality and environmental traits than would a Social and Realistic personality which are placed on opposite points of the hexagon (Holland, 1997).

Consistency and differentiation play a key role in assisting individuals in career and job satisfaction and setting occupational goals. The more consistent and differentiated an individual is defined by the SDS, the greater likelihood of increased job satisfaction. By contrast, the less consistency and undifferentiated an individual is defined by the SDS, the less job satisfaction there will be and the individual may have difficulty in finding a job that fits his or her personality and occupational goals (Holland, 1997). Consistency and differentiation also plays a role in college-major satisfaction. Nafziger, Holland and Gottfredson (1975) performed a study to evaluate the issues of consistency and differentiation of Holland's theory (1997) as it relates to college-major satisfaction and concluded that "students whose types were least like the Holland code of their majors indicated the least satisfaction, and students in majors with Holland codes that matched their types indicated the greatest satisfaction" (p. 134).

Limitations and Delimitations

Limitations as defined by Cresswell (2003) means “to identify potential weaknesses of the study” (p. 148). There are several weaknesses which can be identified in this study. The first weakness is related to the secondary data set, which consisted of a relatively small sample of people who participated in a pilot project for program improvement purposes. The pilot project was undertaken for the purpose of determining the potential use of the SDS as an assessment tool for understanding success rates of persons enrolling in this course. This pilot project was conducted for one semester only so not enough data was collected to discover code patterns in the data. Secondly, the results of the SDS were solely based on the responses of the participants and their honesty in completing the assessment and self-reporting the outcomes. Their Holland code was used in tracking their completion of the course. No other factors were considered.

A delimitation as defined by Cresswell (2003) means “to narrow the scope of a study” (p.148). A delimiting factor for this study was the tracking of students at one institution only rather than tracking students from all of the agencies and private entities which offered this course.

Definition of Terms

The following terms will be used throughout the study and are defined as follows:

- Congruence – “The phenomena coined by John Holland that states individuals will flourish in the same environment as that of their personality type” (Holland, 1997, p. 4).

- Differentiation – “The degree to which a person or an environment is well defined” (Holland, 1997, p. 4).
- Incongruence – “When a personality type lives in an environment that provides opportunities and rewards foreign to that person’s preferences and abilities” (Holland, 1997, p. 5).
- Emergency Medical Technician-Basic – “An individual who provides basic emergency medical care and transportation for critical and emergent patients who access the emergency medical system” (NHTSA, 2007, p. 20).
- Emergency Medical Technician-Intermediate – “An allied health professional who provides basic and limited advanced emergency medical care and transportation for critical and emergent patients who access the emergency medical system” (Shade, Collins, Wertz, Jones & Rothenberg, 2007, p. 4).
- Paramedic – “An allied health professional whose primary focus is to provided advanced emergency medical care for critical and emergent patients who access the emergency medical system” (NHTSA, 2007, p. 21).
- Student success – getting students into and through college to a degree or certificate.
- Completion – EMS students whose names are placed on the Southern Nevada Health District’s *Course Completion Record*.

Summary

The EMT-Basic is the beginning level of training for individuals who desire to work on an ambulance or be considered a candidate for any job at a Fire and Rescue unit in Clark County. The College of Southern Nevada offers this EMT-Basic class as a nine-credit, one semester course for a class that is in high demand. Completion rates for these EMT-Basic classes have been tracked at 54.6% (Hackwith, 2008) over the last four years, which is lower than the general course completion rates of classes at the same community college (College of Southern Nevada, 2008a). In this chapter, background information, the purpose and significance of the study, as well as the research questions were presented. Terms were also defined as they will be used in this study. The following chapter presents the literature review related to retention and graduation rates of community college students, preparation of career students as well as historical information and studies which used Holland's SDS are presented.

CHAPTER 2

REVIEW OF THE LITERATURE

Factors Associated with Two-and Four-Year College Retention and Completion

For decades, institutions of higher education seemed relatively impervious to questions regarding their purpose and need within society and the use of tax payer money. However, shrinking financial sources has forced most colleges and universities to justify their multi-million dollar budgets to legislatures, board of regents and the public. One common, quantitative way in which many state legislators, board of regents, college presidents and accreditation bodies use to demonstrate effectiveness of their schools and programs is through the assessment of specific, measurable outcomes such as graduation rates. Cohort graduation rates (typically six years) are used by the U.S. Department of Education and published annually in the Integrated Postsecondary Education Data System (IPEDS) surveys (Ewell & Wellman, 2007). Since this data is relatively easy to measure (number of students initially enrolled as freshmen vs. the number of graduates six years later) and can be uniformly measured by all schools, it is required of institutions of higher education who are not only seeking state funding, but also to make the institution financial aid eligible (Ewell & Wellman, 2007). Graduation rates have been tracked for many years by most institutions, but because many school's rates have been less than impressive, they tend not to be published or they are printed in obscure institution-only publications not commonly reviewed by the general population

(Carey, 2004). As state budgets have tightened and the need for accountability has increased, many colleges have established services and programs that focus directly on the issue of retention and attrition within their institutions. According to statistics gathered by the Organisation for Economic Co-operation and Development (OECD, 2007), only 54% of entrants to higher education in the U.S. obtain a degree, with most students dropping out of school during their freshman year (as cited in Lau, 2003). The OECD (2006) has also reported that the United States-which at one time led the world in postsecondary degree attainment and degree confirmation-has now slipped to 7th and 19th place respectfully. Some nations, after having watched the growth and prosperity of the United States for multiple decades and leading the world in education, have seen their college attainments rates more than double over the past 20 years (Carey, 2004), while the U.S has remained relatively constant.

Nationally, the number of students obtaining degrees has also remained constant over the past two decades. Five year graduation rates in the 1980s and 1990s have been documented at 58% and 52% respectfully (Scott, Bailey and Kienzl, 2006). In 2002, the six-year graduation rate was 63% (Carey, 2004). However, when one looks at the four-year graduation rate from “four-year” colleges and universities, the graduation rate is only 37% (Carey, 2004). As students and parents seek to find the best educational value and opportunity, a 37% graduation rate is less than impressive; therefore, four-year rates are rarely published.

In Nevada, people have recognized that college completion rates are poor. According to the 2008-09 Almanac, published by the Chronicle of Higher Education, Nevada is second only to Alaska for the lowest college graduation rate which currently

lies at 37%. Nevada also ranks 47th in the country for the proportion of adults (21%) who hold associate or bachelor degrees (“Almanac,” 2008-09).

At community colleges, graduation statistics are especially grim. According to Bailey, Jenkins and Leinbach (2007) who report 2003 statistics by the U.S. Department of Education, indicate that only 36% of all students earn a certificate, or an associate or bachelor’s degree within six years of initial enrollment (as cited in Bailey, Jenkins & Leinbach, 2007). Locally, graduation rates are significantly less and the local college associate degree graduation rate is consistently less than 5% (College of Southern Nevada, 2008a). For example, student cohort’s who entered the college in fall 2004 and fall 2005, have a two-year graduation rate of 4.0% and 2.7% respectfully (College of Southern Nevada, 2008b, p.431). However, it should be noted that these statistics do not take into account students who may receive a certificate of training in a given area or who do not go through the process of applying for formal graduation or degree confirmation.

The EMT-Basic course is a good example of this type of credential. The completion of an associate’s degree is not required as an EMT-Basic and completion of the training results in a certificate of completion provided by the program (not the college). Thus, for individuals who seek to become employed as an EMT or be able to become eligible for possible employment with a local firefighting agency, completion of a program certificate (as opposed to a formal college certificate of completion) may satisfy the student’s educational goals. Since the EMT-Basic class does not satisfy the requirements or credits of a college certificate program, the program certificate is all that the students are eligible to receive upon completion.

Many institutions of higher education, particularly community colleges, have resisted the use of graduation rates as an accountability measure due to inaccurate or skewed data. Bailey, Calcagno, Jenkins, Leinback and Kienzl (2006) describe three areas community college advocates argue must be considered when evaluating community college effectiveness and are summarized below:

1. Graduation rates are misleading outcome measures for community colleges.

Most graduation data focuses on terminal degree completion as the primary measurement of outcome success. As previously mentioned, the EMT-Basic course may satisfy a student's educational goal, but would typically not be considered as a successful outcome due to limitations and definitions in the reporting process. Nevertheless, according to Bailey, (as cited in Bailey, et al. 2006) "a majority of community college students who indicate that they want to complete a degree, fail to do so" (p. 494).

2. Community colleges have little control on the various factors and stresses that

many of its students face that influence student retention and success. Many community college students attend classes part-time and have to balance family and work responsibilities, while contending with fewer financial aid opportunities and deficient academic preparation (Bailey, et al. 2006, p. 494).

3. Another factor that attributes to low success rates as measured by graduates

from community colleges includes those students who transfer to four-year institutions without completing official graduation paperwork. Once again, a student may have viewed their community college education "successful" by completing transfer requirements to a four-year institution, but may not receive an associate degree. There are also situations when a student may attend different colleges in order to accomplish

their educational goals, thus influencing one or more of the school's "success" rate (Bailey, et al., 2006, p. 494-495).

Factors Influencing Graduation Rates

A number of factors have been discussed that are thought to influence graduation rates, some of which have been discussed in the previous section. Additional factors that have been identified that affect student success at all college levels include the following:

Non-traditional students. Bean and Metzger (1985) define non-traditional students as older, part-time and often commuter students. Statistics from the 2006 Community College Survey of Student Engagement report that 63% of all community college students attend school part time (as cited in Ashburn, 2006). Bean and Metzger (1985) found that age and well-defined goal clarification have a greater role in persistence and related outcomes for non-traditional students than for traditional students. However, Scott, Bailey and Kienzl (2006) point out that non-traditional students often have a lack of social attachment to the college and their fellow college students, which also has a profound influence on college success.

Employment of college students. Closely related to the factor above, are the significantly increasing number of students who are working, as well as the number of hours worked per week while attending school. According to Planty, et al. (2008) in 2006 approximately 46% of full-time and 81% of part-time college students ages 16-24 were employed (p.68). Also, according to the report, the number of hours worked per week has increased. In 1970 some 10% of full-time students worked 20-34 hours per week and 4% worked 35 or more hours per week; in 2006 the numbers more than

doubled to 22% of students working 20-34 hours per week and 8% working 35 hours or more per week (Planty, et al. 2008, p. 68). The effects of working while attending school as an isolated factor was not clearly established in the report.

College preparedness. Numerous articles discuss the role of achievement tests and high school performance in predicting college success (Smith & Naylor, 2001; Johnes, 1997; Astin & Oseguera, 2002). Due to their open-enrollment policies, community colleges commonly attract students that need some form of remediation who are trying to work toward a degree or certificate or to improve their academic status prior to enrolling at a university. According to Carey (2004), approximately 20% first-time, full-time public institution college students enroll in at least one remedial reading, writing or math course. At private institutions the remediation course rate is only twelve percent. As it turns out, the consequences of having to complete remedial course work is severe. When comparing those students who took remedial classes compared to those student who did not, graduation rates from four-year institutions increased from thirty-six percent to seventy-six percent (Carey, 2004). A different, but related finding regarding college preparedness is in regards to student's preparedness for the rigors of college. *The Student Engagement survey of 2006* (as cited in Ashburn, 2006) reported that 38% of full-time students spend five or fewer hours per week preparing for class. The 2008 version of the same survey reports that 66% of students spend between one and ten hours preparing for class ("Student Effort," 2008).

College size. The findings of Bailey, et al. (2006) indicate a consistent negative relationship between enrollment size and completion. In general, the authors found that colleges located in urban areas have 3.7% lower graduation rates than suburban colleges,

while rural colleges have completion rates nearly 4% higher (p. 510). The authors also report that larger community colleges have a 9-13% lower graduation rates than do small colleges. Authors Kuh, Kinzie, Buckley, Bridges & Hayek (2006) also discuss the need for colleges to promote a positive, nurturing environment in which the student can thrive. These activities include, first-year seminars, peer monitoring, summer bridge classes, learning communities and living-learning centers.

Improved college access. A qualitative study by Northwestern University's Institute for Policy Research (Glenn, 2004) found that at community colleges in occupational programs, financially needy students who found predictable, stream-lined curricula and an "easy-to-navigate" bureaucracy were more likely to complete an associate degree. The study found that students who attended two-year private colleges with high graduation statistics had a 20% greater likelihood in completing their associate degree than were students attending two-year public institutions. According to Ann Person (as cited in Glenn, 2004), a graduate assistant who conducted the study, "Such delays make it significantly more likely that students will drop out."

Family support. In a commissioned literature review for the National Symposium on Postsecondary Student Success, Kuh et al. (2006) writes, "The odds of earning a baccalaureate degree increase substantially for students whose families are better informed about postsecondary educational opportunities and costs, and who support and encourage their students to become college prepared" (p. 2).

Financial cost. The right amount and kind of money matter to student success. Too little can make it impossible for students to pay college bills; too much loan debt can discourage students and/or parents from persisting (Kuh, et al. 2006).

Faculty involvement and teaching. It has long been accepted that active learning and involving educational environments improve student retention (Ewell & Wellman, 2007). Active involvement of faculty in advising and providing appropriate academic counseling also play a significant role in student success.

Mandatory assessment of basic skills and direct placement into appropriate coursework. According to Ewell and Wellman (2007) there is “considerable evidence” that direct placement into an appropriate level course based upon validated testing improves outcomes.

Proactive early warning and intervention strategies. Academic deficiencies should be recognized early and an aggressive remediation strategy implemented to lessen any undesirable outcome. Since the highest dropout rate is during the freshmen year, institutions need to change the philosophy that an institution “might be better off financially by enrolling four students for one year than one student for four years,” (as cited in Carey, 2004, p. 17).

Full-time vs. Part-time instructors. New Directions for Higher Education published a volume documenting concerns that poor institutional assimilation by part-time faculty adversely affects student learning (Jacoby, 2006). These effects included reduced instructional quality, lack of curricular cohesion and weak advising. In one study from a large midwestern university, Harrington and Schibik (2001) found that when freshmen took a higher percentage of their courses from part-time faculty, they were less likely to persist towards their degree (p. 10). In a retrospective, multi-institutional study dating back almost 20 years, Ehrenberg and Zhang (2005) found that

for each 10% increase in the percentage of faculty employed part-time at four-year institutions, graduation rates decreased by 2.65% (p. 654).

EMT-Basic Course Completion Rates

Although the U.S. Department of Education and institutions of higher education publish graduation rates, individual course completion rates are not routinely collected and disseminated so comparison data of courses, such as an EMT Basic course, are difficult to measure against other similar type course. However, at the College of Southern Nevada (CSN), the reported general course completion rate is 65.4% (College of Southern Nevada, 2008). By comparison, EMT-Intermediate courses at CSN have completion rates of 75.9% between fall 2004 and spring 2008 semesters (Hackwith, 2008).

A comparison with other EMS training programs is also difficult as there is little EMS research conducted within the industry since its inception in the mid-1960's. It is only within the past five to ten years that there has been an attempt to quantify or qualify the positive and/or negative aspects of EMS or EMS systems. Until recently, research within the specialized field of EMS education has been virtually non-existent and much of what has been completed has focused primarily on skill retention. Only one article could be identified by this author that specifically addresses the issue of retention within an EMS class. In a study designed to improve EMT-Basic state certification examination scores in North Carolina, Catawba Valley Community College instituted a 12-hour class that was held prior to the EMT course that included "segments on learning styles, reading with understanding, note taking and test taking" (Less, 2005, p. 194). One of the findings

of this study demonstrated improved retention rates from 56.3% for the control group compared to 75.3% for those students who participated in the 12-hour preparation class (Less, 2005, p. 196).

Career Interest Inventories

Along with Holland's Self-Directed Search (1990, 1997), there are a number of available interest inventories for career counseling purposes, including the Strong Interest Inventory, the Campbell Interest Skill Survey (CISS) developed in 1992, and the Harrington-O'Shea Career Decision-Making System (CDM) developed in 1975. Although the Myers-Briggs Type Indicator (MBTI) is often listed as a career counseling tool, its primary use is that of a personality assessment and career *management* guide ("Career and Personality," n.d.). While the other assessment inventories are designed for an individual to gain information about preferences and inclinations, the MBTI is a personality assessment designed to provide feedback about an individual's pattern of behavior ("Career and Personality," n.d.). Although this may be helpful in identifying an environment in which an individual may be best suited, it does not adequately direct individuals into the best occupational fit. In addition, the MBTI needs a qualified evaluator to assess and interpret the results. Therefore, for the purpose of this study, the MBTI was not considered.

Interestingly, the three other interest inventories listed above all use Holland's (1985) RIASEC personality and environment model in one way or another. Each of the inventories have added to, or modified Holland's typology. The Strong Interest Inventory (hereafter, Strong) was developed by E.K. Strong in 1927 and has been revised

in 2004 to include Holland's RIASEC theory ("History and Theory," n.d.). The Strong includes 317 items in six general occupational themes and then further classified into 109 different occupations ("History and Theory," n.d.). The degree of similarity between the individual and those occupations is then determined by the survey. According to Case and Blackwell (2008), because of its' complicated scoring system, a professionally trained scoring service is required.

The Campbell Interest and Skill Survey (CISS) was created in 1992 by David P. Campbell, and is based upon the work of Alfred Binet's work in the early 1900's (Campbell, 1995). Although it utilizes Holland's RIASEC model, it differs in that the intended audience of the CISS is for college bound or college educated people. Its focus is on leadership activities, management and financial services, and adds a producing orientation (which focuses on mechanical, construction and farming activities) and an adventure orientation (which focuses on military, police and athletic activities) ("Campbell Interest," n.d.). The instrument can be self-scored and targets individuals over the age of fifteen years of age.

In 1975, Thomas Harrington and Arthur O'Shea published the Harrington-O'Shea Career Decision-Making System (CDM: Harrington, 2006). The CDM is also based upon Holland's RIASEC model, although it uses slightly different terminology for its six environments (Harrington, 2006). The CDM's target age is high school through college and has been demonstrated to have test-retest reliabilities of .75 to .91 and a median internal consistency reliability for first year college students of .93 (as cited in Luzzo & Taylor, 1995). An Internet search conducted by this author of testing services found far fewer vendors of the CDM than the other previously mentioned inventories.

History of Holland's Theory and the Self-Directed Search

In the 1940's John Holland worked as a military induction interviewer and began to form a contrarian's belief that "people fall into a relatively small number of (vocational and personality) types" (Weinrach, 1980, p. 407). In an interview with Stephen Weinrach (1980), Holland describes his philosophical approach as it relates to vocational assessment and counseling as follows:

My orientation is similar to the attitude that agricultural experts have about trees and plants. Don't try to tell them how to be a tree; give them the fertilizer and the water. That's what your job is; provide the environment that will stimulate learning, self-understanding, and decision making; get them the information; tell them all you know; support them to explore and express confidence in any direction that they take. I continue to be impressed with the ingenuity and skill that people display in handling their careers, if they are given information and encouragement and a structure for organizing their thinking about themselves and occupations. (p. 408)

This belief, along with his dissatisfaction of existing vocational counseling scoring tests, led to his development of the Vocational Preference Inventory (VPI) in 1953 (Weinrach, 1980). Eight years later, Holland developed the Environmental Assessment Technique (EAT) as he began to focus on the role one's environment plays on a person's vocational choices (Weinrach, 1980). The combination of these two assessment tools laid the groundwork for development of his hexagonal model in 1968 that defines psychological resemblances among personality types and environments and their interactions, which

further led to the development of the SDS (Self-Directed Search), first penned in 1973 (Weinrach, 1980).

Holland Codes and the Self-Directed Search

As summarized by Smart, Feldman and Ethington (2006), there are three basic assumptions or premises of Holland's theory, each associated with one of the three components of the theory-individuals, environments and congruence:

The self-selection assumption assumes that individuals choose occupational and educational environments (i.e. major) that are compatible with their personality types because such environments afford them with opportunities to take on agreeable roles and engage in preferred activities. The socialization assumption is that the model environments (i.e. clusters of academic majors) require, reinforce, and reward individuals for their possession and display their attitudes, values, interests, and competencies that are consistent with the attitudes, values, interests, and competencies of the personality types who dominate the respective environments. Finally, the congruence assumption suggests that vocational and educational stability, satisfaction, and achievement are a function of the "fit" or congruence between individuals and their environment. (p.12)

The SDS has been widely used by over "22 million people worldwide and is supported by over 500 research studies" (Askew, personal communication, January 14, 2008). As stated by M.J. Miller (1999), "Holland's theory has survived nearly 25 years of empirical examination and remains the premier theory in the vocational literature" (p. 109). In 1991, Hyland and Muchinsky reported that "Over the past two decades,

approximately 700 studies have been directed toward various aspects of Holland's 1973, 1985 theory" (p. 75) and "findings supportive of the proposed structure were reported in a large percentage of these studies" (p. 75). In the review of the literature, S.H. Osipow (as cited in Miller, Springer, Tobacyk & Wells, 2004) found that "several hundred studies have been conducted on the SDS, with generally favorable results" (p. 109). Reliability for the SDS has been strong, as the SDS has a split-half (odd-even items) reliability ranging from .83 to .95 for the six scales and retest reliability over 1-week to 4-week intervals ranging from .70 to .89 (Gade, Hurlburt & Fuqua, 1984.). Internal consistency reliability coefficients were calculated for each of the six sections for the 1985 and 1990 editions of the SDS-E (electronic version) and the Kuder-Richardson (K-R) formula coefficients ranged from .75 to .90 (Miller, 2007). Holland (as cited in Osborn & Reardon, 2006) found the middle-school version of the SDS (SDS:CE) also has a high reliability with a K-R coefficient above .91. Validity for Holland's theory has also been supported through research in other countries such as Greece (Sidiropoulou-Dimakakou, Mylaonas & Argyropoulou, 2008), Croatia (Sverko & Babarovic, 2006); as well as in Australia (Melamed, 1976; Taylor, 1983), Pakistan (Shah, 1970), Taiwan (Chu, 1975), Mexico (Fouad & Dancer, 1992) and Canada, New Zealand and South Africa (Lonner & Adams, 1972) (as cited in Leong, Austin, Sekaran & Komarraju, 1998).

The SDS has become such a widely used and accepted career instrument for the purpose of career counseling, that it has been used as the basis for measuring convergent validity. Convergent validity, a component of construct validity, is a process in which one instrument is compared with another instrument measuring the same construct (Drummond, 2003). One such study (Miller, 2007) sought to compare the convergent

validity of an online career instrument, the Career Planning Self-Assessment Exercise (CPSAE) by comparing its results from the SDS using the Iachan Index. According to Miller (1999),

The Iachan Index (M) measures the agreement between two “judges” based on the individual ranking provided by each of the judges. It is desirable to assign more relative importance (weight) to “matches,” e.g. IAR-IAR, in the positions corresponding to higher rankings. The specific choice of weights, W=22, 10, 5, 4, 2, 1 is given in Table 2. The M index ranges from 0 to 28. The measure M is computed by adding the weights, one for each letter that appears in both three-letter codes, corresponding to positions where the match occurs. For example, a person’s code of SEC which is paired with a parent’s code of CEI shows two letters in common, E and C. The C is in positions 3 and 1 (or 1 and 3), with a weight of 4. The E is in positions 2 and 2, with a weight of 5. Therefore, the M index is 9 for this person. (p. 109)

Table 2

Illustrative Weights for Assessing Agreement Between Two Three-Letter Codes for the M index

Summary Code of Child	Summary Code of Parent		
	First Letter	Second Letter	Third Letter
First Letter	22	10	4
Second Letter	10	5	2
Third letter	4	2	1

From Miller, M. (1999). Similarity between anticipated career selection and SDS sources Using the Iachan Index. *College Student Journal*, 33(1), 109.

Analysis using the Iachan Index showed a “relatively high degree of congruency” (Miller, 2007, p. 14) by showing a mean index of 24.8 ($SD = 3.6$; range = 14-28) between the two instruments based upon a maximum Iachan score of 28. According to Iachan (as cited in Miller, 2007), an Iachan Index score of 24.8 is considered a “close match” (p. 13).

Although Holland’s theory and the corresponding SDS was originally developed as a means to assist individuals in finding a satisfying career pathway in which they have the greatest likelihood of vocational stability, satisfaction and success, Holland (1997) has consistently noted that the “hypothesis about educational behaviors (also) resemble those for vocational behavior. The choice of stability in, satisfaction with, and achievement in a field of training or study follow rules identical to those outlined for vocational behavior” (p. 71). The strength of Holland’s theory lies in the equal weight given to the attributes of individuals and to the fundamental nature of their educational and occupational environments in understanding their subsequent levels of educational or vocational success (Smart et al. 2006). Holland’s hexagonal model has found favor within academia because his specificity in the constructs of his theory (i.e. the attributes of individuals, their environment, and the level of fit or congruence between each) helps counter the “atheoretical empirical search for factors associated with student success that is characteristic of some contemporary efforts” (Smart et al. 2006, p. 6).

As much as Holland may have verified the role of his theory for educational purposes, there has been a remarkable void of citations to his theory in educational journals (Smart, et al. 2006). However, that has begun to change. A large, retrospective study performed by Allen and Robbins (2008) reviewed the relationship between

vocational interest-major fit, pre-collegiate academic preparation (i.e., high school GPA and ACT scores) and the student's first-year GPA as they relate to college persistence. In this study, Allen and Robbins (2008) used the Holland code of over 48,000 students who completed the ACT Assessment Program and then entered college between 1994 and 2002 and persisted through at least three years of school. The results suggest that "interest-major fit and first-year academic performance work to independently predict whether a student will stay in their entering major" (p. 69) with internal reliabilities for the six different Holland codes that range from .85 to .91. Ciechalski (2002) identified a split-half reliability from .85 to .95 and a test-retest reliability at a four to twelve week interval of .76 to .89. Swanson and Hansen (as cited in Holland, 1997, p. 147) found that students who had high flat profiles (high degree of differentiation) had higher grades and were less likely to drop out of college than students who had low flat profiles (low degree of differentiation).

In a study involving high school graduation rates, Gade, et al. (1984) found that students with a certain Holland code (R) had a higher high school dropout amongst American Indians than students with other Holland codes. This seems consistent with findings from Holland (1997), who contends that Realistic personality types adjust poorly to most school environments and have the lowest level of academic achievement amongst all personality types.

The National Postsecondary Education Cooperative (NPEC) has recently expressed their support in the use of Holland's theory within academia to aid in the understanding of student success. According to their website, the NPEC was established by the National Center of Educational Statistics (NCES) in 1995 as a voluntary

organization that encompasses all sectors of the postsecondary education including federal agencies (Department of Education), postsecondary institutions, associations and other organizations with a major interest in postsecondary education data collection. In a 2006 commissioned report for the National Symposium on Postsecondary Success, Smart, et al. (2006) discussed the use of Holland's theory as part of a comprehensive plan to improve student success at the postsecondary level. When introducing the purpose and role of Holland's theory, the authors state,

We believe that reliance on Holland's theory would help address our concern that contemporary efforts to understand student success in postsecondary education are likely to have only moderate success because they lack sufficiently systematic theoretical guidance, focus disproportionately on the predispositions and behaviors of college students, and tend to ignore the socialization influences of college environments (p. 5).

The authors also recognize that Holland's theory cannot be used exclusively, but emphasizes the need to use a "theory-based approach that has direct applicability to the investigation of student success" (p. 6).

Smart, et al. (2006) are basing their comments and beliefs above, in part, on the results of a study involving over 2,300 students and 360 different institutions in which they compared student's field of study, their ability and interest scale, and their personality trait and how each changed over a four-year period. Students were given a self-reporting survey as incoming freshmen that aided the researchers in identifying the type of RIASEC code each student had and compared that with the students chosen major field of study and their self-described personality type as determined by the survey

created, in part, by Holland. After a four year period, students took a repeat survey to determine if the students had changed in their abilities and interests. Consistent with Holland's theory (1985, 1997) researchers found that with few exceptions, students that displayed a personality type that was congruent with their major field of study demonstrated an increase in the abilities and interests within that area. Conversely, students who did not have the same personality type as was their major (incongruent), did not see much of an improvement in their abilities and interests in the same area. In other words, freshmen who displayed characteristics consistent with an Investigative personality and then majored in a field of study listed as an Investigative environment (as based on the SDS) had significantly improved Investigative abilities and interests. A freshman with an Investigative personality that majored in a non-Investigative environment major displayed either no change or a decrease in their Investigative abilities (Smart, et al. 2006). These results were consistent amongst all environment and personality types studied; with the exception of Enterprising types who entered Enterprising academic environments did gain in enterprising abilities and interests, as did Enterprising types who entered Investigative academic environments (Smart, et al. 2006, p. 28). The authors of the study concluded that a students' likelihood of growth in their initially prominent characteristics is jointly dependent on the student's own personality and the congruence or fit between their personality and an environment that requires, reinforces and rewards that particular collection of abilities and interests.

Regarding the SDS, one issue that has been raised is that of gender bias within the assessment tool itself. A number of recent articles have demonstrated that males tend to have a higher number of Realistic scores than do that of females (Turner, Conkel,

Starkey, Landgraf, Lapan & Siewert , 2008; Osborn & Reardon, 2006). In these same studies, females were found to have higher Artistic scores (Turner et al. 2008), while Osborn and Reardon (2006) found that females were higher in the Social area.

Career Choice and the Role of Counseling

Most students who enroll in CSN's EMT-Basic class tend to be young in nature. Expecting 18-20 year old students to have an identifiable specific career path may not be realistic, leading some students to have initially enrolled into the course unsure of exactly what the EMS field was and what the coursework entailed. According to an article in U.S. News and World Reports, only 12% of people are likely to pick the right job for themselves during their twenties (Wolgemuth, 2008); thus the need for effective, timely career counseling.

Helping to identify an important career track and fostering a sense of purpose in their career development may lead to deeper levels of commitment and persistence. Regardless of the method or type of counseling used, the goal centers around assisting the student to explore and understand their strengths, promoting student identity, and understanding of self and the role that culture and service play (Kosine, Steger & Duncan, 2008). The standard used by the American School Counselor Association (ASCA) is the 2005 ASCA National Model that promotes that students, "a) acquire the skills to investigate career in relation to knowledge of self, b) employ strategies to achieve career goals, and c) understand the relationship between personal qualities, education, training, and work" (Kosine, et al. 2008, p. 133).

One comprehensive and dynamic career theory commonly used for counseling is the Social Cognitive Career Theory (SCCT), which is based upon Bandura's Social Cognitive Theory (Tang, Pan & Newmeyer, 2008). According to Bandura (2001), individuals choose to engage in or avoid a specific task based on their self-judgment of their competency in accomplishing the task. Therefore, the belief that one is capable of performing in a certain manner to attain a particular goal (i.e., self-efficacy) is task or skill specific.

The premise of SCCT is that career choice is shaped by outcome expectancies, career interests, and career self-efficacy (Lent, Brown & Hackett, 2000). As has been previously identified, it has been theorized that many of the students in the EMT-Basic course are taking the class for the purpose of meeting prerequisite requirements to test for local fire departments and not for their specific desire to serve within the field of EMS. Perhaps EMS does not fit into their specific career interest or expectation, thus influencing their effectiveness in or desire to complete the class.

Summary

The tracking of retention and graduation rates has become one standard by which many colleges and universities are using to justify their effectiveness to individuals approving budgets. Retention rates of community colleges are significantly less than that of four year institutions, but few colleges or universities are tracking individual course completion rates. However, in technical training courses, individual course completion rates may be the only measure of success in courses such as an EMT-Basic class.

There are a variety of issues that affect the success of college students at either community colleges or four-year universities. Issues such as the type of student enrolled, how much students work while attending school, college preparedness and the experience each student has at their institution are just a few of the key factors affecting retention and graduation rates.

There are a variety of career inventories available for use for counseling and assessment of a student's career interests and major field of study. Many of these assessment tools have used Holland's RIASEC model and then modified the model as they each saw fit. Of these career inventories, John Holland's Self-Directed Search is the most common.

John Holland's Self-Directed Search has extensive research supporting its use as a career counseling tool. Research suggests that it can be applied to both adult work histories and vocational choices of high school and college students (Holland, Aage, Clark, Nafzinger & Blum, 1973). Limited research has demonstrated its effectiveness as a reflection of high school completion and college persistence.

CHAPTER 3

RESEARCH METHODOLOGY

The purpose of this descriptive, exploratory study was to determine if specific personality types and vocational choices as identified by the Self-Directed Search were more successful in completing an EMT-Basic course at a local community college.

Secondary data was utilized to answer the following research questions:

1. Which Holland code is most prevalent amongst EMS completers at the College of Southern Nevada?
2. What is the completion rate of students in the EMT-Basic course with the specific EMS code of RSI and the firefighter code of RES as listed in the *Dictionary of Holland Occupational Codes* (Gottfredson & Holland, 1996)?

Population and Sample

This study utilized secondary or shelf data which was collected as part of a program improvement process described more below and which focused on increasing course completion rates of students enrolled in EMS 108B. At the time the project was initiated, two sections of EMS 108B (lecture component) were selected with 24 students in each section and a total of 47 students who chose to participate in the process. EMS 108B Section 801 and Section 803 were selected for two reasons: (1) each course was

taught by an experienced, tenured faculty member with eleven and seventeen years of teaching experience respectfully, and (2) for convenience. In convenience sampling a group is selected at will or in a particular program (Kuzma, 1998, p.16). Kuzma goes on to say that convenience sampling is often used “when it is virtually impossible to select a random sample” (p. 16). Although it would have been possible to randomly select students from the eight different EMT-Basic sections offered each semester, it would have been significantly more challenging to capture the data in an organized fashion. By randomly selecting students from different course sections, it would have also brought into question variables such as class demographics (i.e. day versus evening classes, weekday versus weekend classes) and variables related to individual instructor teaching techniques.

The Need for Program Improvement

Prior to the fall 2004 semester, the college EMS faculty began to discuss the need to reduce attrition in the EMT courses. One area of particular interest for the faculty was to better understand the reasons why so many students were dropping or failing out of the EMT-Basic course. Faculty had already accepted that an estimated 50% fail rate was unacceptable and that improvements had to be made. Other related issues also became apparent at that time, including a poor hire rate of CSN students at one significant local EMS agency (Carlo, personal communications, 2004) and a lower than expected pass rate on the state certification examination (Hackwith, 2008). It became obvious that changes to the program had to be made, which included an aggressive campaign to improve state certification scores and increase student graduate hiring rates through curriculum review.

and improving communication to future students to inform them of the necessary academic rigor of the course through student orientations and advising paperwork.

After investigation into different academic preparation assessment tools and reevaluating our perceived needs, it was decided that the goal was not to evaluate academic preparation, but to evaluate whether or not a student's personality and vocational goals made a difference in course completion. Thus, the use of the SDS for the spring 2008 semester was implemented. Since budgetary constraints limited the use of the SDS for all eight sections of EMT-Basic class, the decision was made by the program director to pilot the SDS assessment using two sections and to review the findings to determine if the assessment cost was warranted.

The data collected was an attempt to understand high attrition rates in this course and was implemented as a program quality improvement process as well as to determine whether an investment of funds for purchasing the assessment instrument would help in correlating completion rates of those enrolled in the course.

Instrument

Posing a variety of questions and experiences, the *SDS: Assessment Booklet, Form CP* (hereafter *Assessment*) developed by Holland (1990) is an approximate 216-item self-administered, self-scored, and self-interpreted interest inventory that yields a three-digit alphabetic code for each of Holland's six personality and vocational types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (RIASEC). This three-letter code is created by answering "Yes" or "No" to statements in the areas of Activities, Competencies, and Careers (Holland, 1990, p. 4-9). Using the *Assessment*, a

student will answer whether or not he or she likes or dislikes to, “Work on a car” or “Read scientific books or magazines” or “Act in a comedy or play” or “Write business letters” (Holland, 1990, p. 4-9).

Based upon one’s answers, the three-letter code becomes indicative of the personality type and environment in which an individual will have the greatest likelihood of high job satisfaction. For example, a three-letter code of CEI would indicate an individual who resembles most the Conventional (C) type, with less resemblance of the Enterprising (E) type, followed thirdly by the Investigative (I) type. The individual will then use his or her code of CEI to find the corresponding list of potential career options as listed in the *SDS: Careers Options Finder* (Holland, 2001). Fifty copies of both the *Assessment* and the *Career Options Finder* were purchased from Learning for Life Resource Center, Phoenix, AZ at a price of \$6.50 each (Askew, personal correspondence, January 14, 2008). The student used the *Assessment* to ascertain their three-letter code and then completed the process using the *Career Options Finder* to identify a list of best fit occupations.

Pilot Project Data Collection Procedure

After receiving the *Career Options Finder* and the *Assessment*, arrangements were made with two tenured faculty to conduct the pilot project during the spring 2008 semester, at the beginning of the second class meeting. The second class meeting was chosen to allow the instructors to review the course syllabus during the first class meeting, including course requirements, the attendance policy and grading scale. This would have allowed students who decided not to participate in the class, due to an

inability to meet any of the requirements, an opportunity to drop the course and stop attending the course.

An *Assessment* (Holland, 1990) and *Career Options Finder* (Holland, 2001) were distributed to each participating student, who then completed the process per the instructions in the *Assessment* to determine their three-letter Holland code. As instructed by the *Assessment*, ties within their code were to be handled by placing them in any order as determined by the student. Of the 48 available students, 47 students participated in the exercise for a return rate of 98%. A student identification number was created that corresponded with each student's name and a table was constructed that listed the student identification number of each student and their self-reported code. At the conclusion of the semester, the names were then compared to the SNHD OEMSTS course completion record as well as the student's grade to determine satisfactory completion of the course. Upon completion of the semester, the percent of satisfactory completers of the course were calculated and added to the table.

Prior to returning the *Assessment*, each student was given the option of using the *Career Options Finder* to identify the occupation that corresponds to their three-letter code. The *Career Options Finder* lists 911 careers, including the career of Emergency Medical Technician (EMT) which is listed initially as the primary code of RSI (Realistic, Social, Investigative), with secondary codes of RIS (Realistic, Investigative, Social) and RSA (Realistic, Social, Artistic) (Holland, 2001). The code for firefighter is primarily listed as RES (Realistic, Enterprising, Social) and secondarily as RSE (Realistic, Social, Enterprising) (Holland, 2001).

Data Analysis

Descriptive research comprises the “kind of analysis we use when we want to describe the population we are studying, and when we have a population that is small enough to permit our including every case” (Healey, 1999, p. 7). In this descriptive, exploratory study, student secondary or shelf data was used to track Holland codes and to calculate frequencies and percentages of the various patterns found in the group completing the SDS.

Summary

The purpose of this descriptive, exploratory study was to determine if students with specific personality types and vocational choices as identified by the Self-Directed Search were more successful in completing an EMT-Basic course at The College of Southern Nevada. The research questions centered on identifying the most common Holland code found within two EMT-Basic classes and then determining whether or not the completion rates of the students with the Holland code for EMS or firefighting were higher or lower than other students. Data collected for program improvement purposes and reported as secondary data for this study, were utilized to assist in understanding ways of improving success rates after numerous other adjustments had previously been done to the course, with seemingly little positive impact. These adjustments included a rewrite of the curriculum, and improving communications with future students regarding the requirements of the course.

The SDS was selected as the assessment tool to determine if there was an increase in frequency of success with specific personality/environment fit codes specific for EMS.

Due to the costs associated with the assessment tool however, only two sections of EMT-
Basic course had been selected to participate in the pilot project during the spring 2008
semester. The assessment tool was only administered to 47 students. Each student
completed the SDS and determined their Holland code per the directions of the SDS.
This secondary data was collected and aggregated for analysis; frequencies and
percentages were tabulated.

CHAPTER 4

FINDINGS OF THE STUDY

Introduction

The purpose of this descriptive, exploratory study was to determine if specific personality types and vocational choices as identified by John Holland's Self-Directed Search (1985) were more successful in completing an EMT-Basic course at the College of Southern Nevada. This study utilized secondary data which were collected during a program improvement pilot project during the spring 2008 semester and using students enrolled in two sections of EMS 108B students. This assessment was to determine which trends, if any, could be identified in the successful completion rate of students with the SDS Holland code associated with EMT and firefighters when compared to students with other SDS Holland codes.

Demographics of Participants

Students enrolled in two sections of EMS 108B (n=48) were asked to participate in the process improvement pilot project. Forty-seven (n=47) students elected to participate in the spring 2008 semester. Initial descriptions of this pilot group seemed consistent with anecdotal perceptions that EMT students tend to be young males. According to the college student information system (SIS) database, 37 of the 47 students were male (78.7%) and 10 were female (21.3%). The average student age was 23.3 years

with a range of 18-49 and a median age of 22 years (Student Information Systems, 2008). Most students had a tendency to be working full-time, normally in fields unrelated to emergency medical services while attending class as a part-time student.

When reviewing each student's *Assessment*, it was identified that of the 47 students, two students had the EMT primary Holland code of Realistic, Social, Investigative (RSI) and one student had the EMT secondary code of RIS. Two students had the primary code for firefighting of Realistic, Enterprising, Social (RES), while three students had the secondary firefighting code of RSE (See Table 3). Each EMT-Basic class section had one student with the primary EMT code and at least one student in each section with the primary and secondary firefighter codes.

Table 3.

Primary and Secondary Holland Code Completion Rate

Holland Code Description	Holland Code	Students (n)	Outcome^a (%)
Primary EMT Code	RSI	2	100
Secondary EMT Code	RIS	1	100
Primary firefighting Code	RES	2	0
Secondary firefighting Code	RSE	3	100

Source: College of Southern Nevada EMS Program Data

^aOutcome: The percent of students successfully completing the course.

At the conclusion of the semester, SNHD course completion documents and a copy of the student's final grade report were received by the two instructors and the table updated to include both satisfactory completion of the course (Pass, Yes or No) and the

students final grade (see Table 4). The grading scale as documented on the Spring 2008 EMT-Basic course syllabus for both sections is as follows: A=94-100%, B=86-93% and C=80-85%, F=<80%.

Analysis of Research Questions

Research Question One: Which Holland code is most prevalent amongst EMT-Basic completers at the College of Southern Nevada? Of the 47 students who participated in the study, 32 different SDS Holland codes out of 300 possible codes were identified. Of these 32 three-letter codes, the most frequent code was SRE (Social, Realistic, Enterprising), which was identified by four students (12.5%) (see Table 4). The secondary code for firefighters of RSE was identified three times (9.3%) and ten different codes were identified two separate times (6.2%), including the primary code for EMT's (RSI) and the primary code for firefighters (RSE). The secondary code for EMT's was identified only one time (3.1%). Occupational areas for the most common code of SRE include athletic trainers, coach, and occupational therapist (Holland, 2001, p.9) and of these four students, three satisfactorily completed the course (75%).

Research Question Two. What is the completion rate of students in the EMT-Basic course with the specific EMS code of RSI and the firefighter code of RES as listed in the Dictionary of Holland Occupational Codes (Gottfredson & Holland, 1996)? In response to research question two, both students who had the primary Holland code of EMT's (RSI) satisfactorily completed the course with a grade of A and B respectfully. The student with the secondary EMT code of RIS finished with a grade of C. All three

Table 4.

Student Success, Spring 2008 EMT-Basic Class, Groups A & B

ID	SDS Code	Possible Occupation	Completed^a/ Grade^b
Group A			
A1	RIS	Electronics Design/Forester/Cabinet Maker	Yes / C
A2	SEA	Spec. Ed. Director/Fire Chief/Teacher	No / F
A3	RAS	Cook, pastry	Yes / C
A4	IES	Psychologist/Sociologist/Pharmacist	Yes / B
A5	ESI	College Dept. Head/Lawyer/Tax attorney/Newscaster	Yes / B
A6	SIE	Med-Records/Dietician/Nurse Instr/PT/Insur Adjuster	Yes / A
A7	ESI	College Dept. Head/Lawyer/Tax attorney/Newscaster	Yes / A
A8	RSE	Cable installer/Police	Yes / A
A9	SRI	Phlebotomist/Radiological tech/Spec. Agent, Customs	Yes / A
A10	SER	Police/PE teacher	Yes / A
A11	SEI	Insurance attorney/Psychologist/Nurse/School principal	No / W
A12	RES	Firefighter/Labor crew supervisor/Flight engineer	No / F
A13	SIE	Med-records/Dietician/Nurse Instr/PT/Insur adjuster	No / F
A14	ISR	Dentist/Cardiopul Tech/Nurse-Private/Vet Tech	No / W
A15	ECI	Auditor-County or city/Town clerk/Electr Power Sup.	Yes / C
A16	RSI	EMT/Data communications analyst/Bridge Inspector	Yes / A
A17	SRE	Athletic trainer/Coach/Occupational therapist	No / W

Table 4 (continued). Student Success, Spring 2008 EMT-Basic, Groups A & B

ID	SDS Code	Possible Occupation	Completed^a/ Grade^b
A18	SIR	Doctor/Nurse-midwife/Nurse-office/Resp. therapist	No / W
A19	SRE	Athletic trainer/Coach/Occupational therapist	Yes / B
A20	AIE	Writer/Cryptanalyst/Illustrator	No / F
A21	RCI	AV Tech/Drafter	No / W
A22	CSE	Accountant/Title examiner/Cashier/Legal sec.	Yes / A
A23	AER	Sculptor/Make-up Artist/Illustrator/Fashion artist	No / W
Group B			
B1	IRS	Editor/Appraiser/Economist	Yes / C
B2	RES	Firefighter/Labor crew supervisor/Flight manager	No / W
B3	ESC	Business manager/Buyer/Financial planner	No / W
B4	ARI	Model maker/Architect	No / F
B5	RAE	Sound FX tech/Cook/Painter/Flower design	Yes / C
B6	SRE	Athletic trainer/Coach/Occupational therapist	Yes / A
B7	RIE	Pilot/Geologist/Laboratory assistant	No / W
B8	SIC	Optometric assistant	No / W
B9	SIC	Optometric assistant	Yes / A
B10	SRE	Athletic trainer/Coach/Occupational therapist	Yes / C
B11	ERS	Pilot/Police/Sales	No / W

Table 4 (continued). Student Success, Spring 2008 EMT-Basic Class, Groups A & B

ID	SDS Code	Possible Occupation	Completed^a/ Grade^b
B12	RSE	Firefighter/Cable installer/Police	Yes / C
B13	ERS	Pilot/Police/Sales	Yes / B
B14	RSI	EMT/Data communication analyst/Bridge inspector	Yes / B
B15	SCE	Interpreter/TV-Radio host/HR.	Yes / B
B16	RCI	AV Tech/Drafter	No / W
B17	SEC	Claim agent/City manager	No / W
B18	SER	Police/PE teacher	No / W
B19	RSE	Prosthetist/Police/Wildlife agent/Firefighter	Yes / A
B20	RAS	Cook, Pastry	Yes / A
B21	SEA	Sp Ed/Caseworker/Fire Chief/Teacher	Yes / C
B22	CAR	Publisher/Accountant/Editor	Yes / A
B23	IRS	Editor/Appraiser/Economist	Yes / C
B24	REC	Jeweler/Locksmith/Construction inspector	Yes / A

Source: College of Southern Nevada EMS Program Data

^aPass: Satisfactorily completed the course, Yes or No

^bGrade Scale: A=94-100%, B=86-93% and C=80-85%, F=<80%, W=Withdraw, AU=Audit

students who had the firefighting secondary code of RSE passed the course with two A's and a C, but neither of the two students who had the primary firefighting code of RES passed the course. To summarize, of the eight students who had either primary or secondary codes of EMT's or firefighters, six students satisfactorily completed the course

for a 75% pass rate. Of the two students who did not pass the course, one student had a late withdraw from the class for unknown reasons and the other student received a failing grade.

Additional Results

Although the study produced limited results with regard to the research questions, the researcher conducted post hoc examinations of the data which focused on the frequency of the first letter code and the letter which was most prevalent. Due to the limitations of the number of students who were identified as having the primary and secondary code for EMT and firefighter, additional information was reviewed to better understand the phenomena.

As discussed in Chapter 3, some studies have evaluated the significance of the first letter within an individual's code (Gade, et al. 1984; Smart, et al. 2006; Turner, et al. 2008; Osborn & Reardon, 2006) in regards to career and academic success. An assessment of this study's data showed that the Social personality and vocational type to be the most prevalent (n=17), followed closely by the Realistic type (n=15) (see Figure 2).

As determined by Turner, et al. (2008) and Osborn and Reardon (2006) males tend to have a higher number of Realistic scores than that of females. Although there were only ten female students in this study, not one female student had an originating SDS Holland code in the Realistic (R) category, thus 15 of 15 students with codes beginning with the letter R were male.

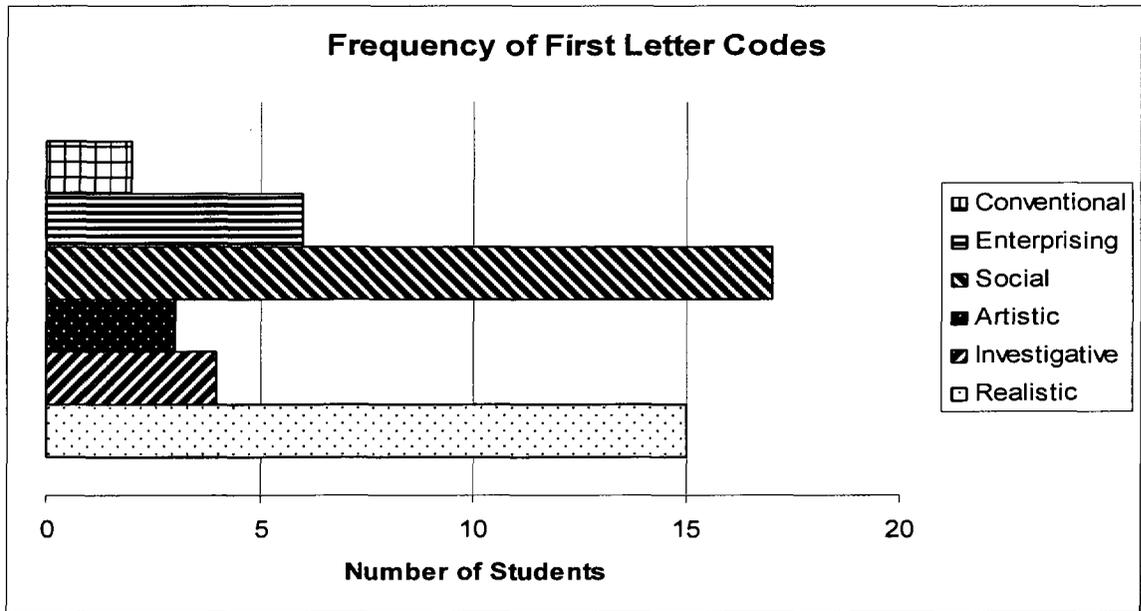


Figure 2: *Frequency of First Letter Holland Codes, Spring 2008 CSN EMT-Basic Courses*

As part of his theory, Holland (1997) suggests that Realistic personality types adjust poorly to school environments and may not be as successful in school as other personality types. This theory was supported by Gade, et al. (1984) in a small study involving American Indians in high school. In this EMS study, Realistic personality types had a completion rate of 60%, which was third behind Conventional (100%) and Investigative (75%) types; however these two groups had only two and three students respectively (see Figure 2).

In addition to evaluating first-letter codes, an analysis of the frequency of each individual code [commonly reported as Item Endorsement by Holland, Fritzsche and Powell (1997, p. 19)] revealed the Social (S) code was most frequently aspired to (n=37) amongst this group of EMS students, followed equally by the Realistic and Enterprising (E) codes (n=31). The Artistic (A) and Conventional (C) codes were identified by students the least number of times (n=9 and n=11 respectively) (see Figure 3). This

finding of low Artistic and Conventional codes amongst males is consistent with findings reported by Holland, et al. (1997) in the *SDS: Technical Manual* (p. 21, Table 19).

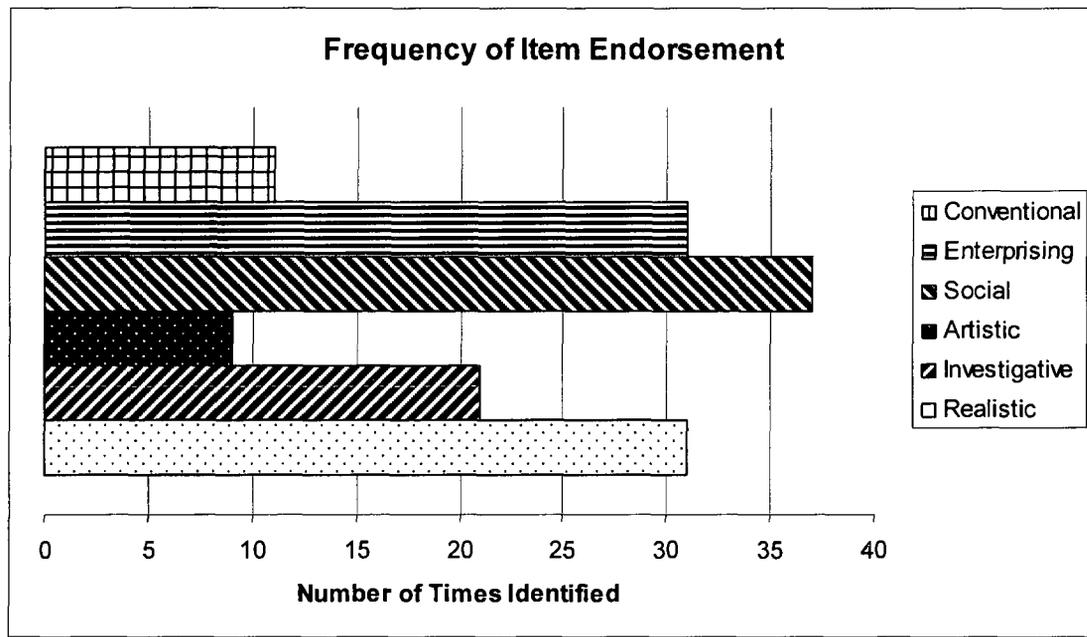


Figure 3: *Frequency of Item Endorsement, Spring 2008 CSN EMT-Basic Courses*

Further evaluation of the students RIASEC codes prompted assessment of the students' first- and second-letter code. In this process, the first two letters were paired in either position and then correspondingly grouped together for reporting (i.e. code RSI would be evaluated as both RS and SR). As seen in Table 5, the pairing of SR/RS was the most prevalent two-letter code combination, with SE/ES and SI/IS tied for the second most common pairing. The pairing SR/RS was identified for ten students, while the two other most common pairings were identified six times. A number of other pairings were so infrequent that they were deemed to be insignificant and thus not reported.

Table 5.

Two-Letter Code Frequency

Holland Code	F	%	Completers ^a (%)
SR or RS	10	21	90
SE or ES	6	13	67
SI or IS	6	13	33

Source: College of Southern Nevada EMS Program Data (n=47)

^aCompleters: The percent of students successfully completing the course.

One additional finding was the close relationship identified by the two primary codes of EMT (RSI) and firefighting (RES) when comparing these two codes with each other using the Iachan Index (M) (Iachan, 1984). Using the Iachan Index as described in Chapter 2, $M = 24$, which reveals a “significantly high degree of agreement” or congruency of those two codes having similar traits (Iachan, 1984, p. 139). This is important in that it demonstrates that students who are searching to become firefighters and have the primary code of RES should also find satisfaction and success in the field of EMS.

Summary

The purpose of this descriptive, exploratory study was to determine if specific personality types and vocational choices as identified by John Holland’s Self-Directed Search (1985) were more successful in completing an EMT-Basic course at the College of Southern Nevada. Secondary data consisting of forty-seven students’ participation in a pilot project were reported in this study. The results show that two students were

identified as having the EMT primary code of Realistic, Social, Investigative (RSI) and one student had the secondary code of RIS. Additionally, two students had the primary code for firefighting of Realistic, Enterprising, Social (RES), while three students had the secondary EMT code of RSE.

Among the respondents who participated in the pilot project, the code SRE was found to be the most common and the completion rate of those with the EMS code of RSI and the firefighter code of RES as listed in the *Dictionary of Holland Occupational Codes* (Gottfredson & Holland, 1996) were 100% and 0 respectively. The Social (S) and Realistic (R) types were the most common single-letter codes as well as the most common two-letter pairing code found amongst the students. Of the students who had either combination of SR or RS as their two-letter code pairing, 90% of these students satisfactorily completed the course.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this descriptive, exploratory study was to determine if specific personality types and vocational choices as identified by the Self-Directed Search (SDS) were more successful in completing an EMT-Basic course at the College of Southern Nevada (CSN). As stated previously, the success rate for the EMT-Basic course has been documented at 54.6% since 2004 (Hackwith, 2008), which is significantly below the success rate of the other two levels of EMT training at CSN. In an effort to assist the faculty in improving pass rates, the SDS was chosen to assess whether or not a student's personality and vocational goals made a difference in course completion.

Secondary data was utilized to report the findings of this study which consisted of the outcomes of a pilot project conducted during the spring 2008 semester. Two sections of EMS 108B were chosen and 47 students completed an *Assessment* and each student calculated their own Holland code based on the instructions provided in the *Assessment*. At the conclusion of the semester, the outcome of each student's course effort was documented, along with their specific Holland code. The goal was to identify trends that may assist faculty in understanding which students could be most successful based on their Holland code and to possibly help in making recommendations to future students with career guidance or course selection.

Conclusions

There have been over 700 studies evaluating Holland's theory and a "large percentage" of these studies have supported its premise (Hyland & Muchinsky, 1991, p. 75). Reliability for the SDS has been strong and its use has been validated in multiple studies both domestically and abroad (Gade, et al. 1984; Miller, 2007; Osborn & Reardon, 2006; Leong, et al. 1998; Drummond, 2003). Recently, there has been an increase in attention applying Holland's theory to college student's major and satisfaction (Allen & Robbins, 2007) and the National Postsecondary Education Cooperative (NPEC) has recently expressed their support for the use of the theory in understanding student success (Smart, et al. 2006).

Holland's SDS (1990) was selected because of its worldwide use and acceptance as a personality and vocational selection tool which can be self-scored by the student. The overwhelming 4:1 male to female demographic of the students in this study seemed consistent with previous EMT classes over the years, as was the fact that most of these students fell into the "non-traditional" category in either their age or that most of them were attending college as a part-time student due to work requirements. The increasing number of students who are working while attending college is consistent with recent national trends found in educational student surveys (Planty, 2008).

With a total of 300 possible three-letter code variations as part of Holland's RIASEC theory (Holland, et al., 1997), only two students identified themselves with the primary EMT code of RSI and only two others identified themselves with the primary firefighting code of RES (see Table 4). This information was somewhat unexpected as many of CSN's EMS students are primarily taking the course with the ultimate goal of

eventually becoming either an EMT and/or firefighter. This low number (n=4) limits specific conclusions, therefore, making any substantive changes to the procedure in which students are enrolled is not possible. If, out of 47 students, only four students had primary codes for EMT and firefighter, the number of students assessed and the length of time it would take to develop a sample size large enough to determine any patterns and formalize specific recommendations regarding specific Holland codes is beyond the scope of this study. It is also cost prohibitive without a proper funding source. Due to the financial cost of this project and program budgetary constraints, the project was only limited to one semester.

In response to research question one, the most prevalent Holland code identified in this study was SRE (Social, Realistic, Enterprising) which includes occupations such as athletic trainers, coach, and occupational therapist (Holland, 2001, p.9). However, there were only a total of four students (8.5%) out of 47 that had this code. The Iachan Index (M) for SRE and RSI (EMT primary code) would be a score of 20, which demonstrates a moderate level of congruency. Clearly, the Social (S) and Realistic (R) personality traits are shared by these two groups as reflected by the first two letters in common. The second most common code was RSE, the secondary code for firefighters, which was identified three times (6.3%); followed by the EMT code RSI and the primary firefighting code of RES which were identified two times (4.2%) each. However, even with code SRE being the most popular code, having only four students out of 47 limits the drawing of any significant conclusions for this particular question.

In response to research question two, the two students who had the primary Holland code for EMT's (RSI) satisfactorily completed the course, as did the student with

the secondary EMT code of RIS (Table 4). All three students who had the firefighting secondary code of RSE passed the course, but neither of the two students who had the primary firefighting code of RES passed. To summarize, of the eight students who had either primary or secondary codes of EMT's or firefighters, six students satisfactorily completed the course for a 75% pass rate.

Additional results were determined based upon previous studies regarding Holland's theory and the SDS where, an evaluation of the first-letter code seemed prudent, although it was not a specific research question for this study. Interestingly, the Social and Realistic codes were by far the most prevalent, and both EMT'S and firefighters have predominantly Social and Realistic characteristics (RSI and RSE respectfully). Together, the Social and Realistic codes accounted for 32 of the 47 (68%) different first-letter codes. Similarly, as shown in Figure 3, the Social, Realistic and Enterprising types were the most common codes identified throughout the group's three-letter codes (not just as its first letter).

Additionally, when two-letter codes were reviewed, the Social/Realistic pairing was once again predominant. This consistently demonstrates that this study group predominantly selected the personality or vocational type associated with Realistic and Social codes. However, the predominance of the Social and Realistic types within this study group was inconsistent with findings of Holland et al. (1997) where the SR/RS pairings accounted for only 9% of such pairings amongst a 1994 sample of college males (p. 85). The persistent occurrence of these two personality types indicates positive congruency in this EMS study group with the primary and secondary EMS codes of RSI and RSE.

The pass rates of the SR/RS pairings was significantly greater than other pairings at 90% compared with the second highest pass rate of SE/ES at 67% (see Table 5) and well above the overall completion rate of 57.2% (Hackwith, 2008) by all students enrolled during the spring 2008 semester. Interestingly, when comparing the pass rate of all students with the first-letter code of either S or R (17 of 32 students), the pass rate was only 53%.

Due to the high percentage of Social and Realistic students within this group, a high percentage of these students should respond to instructional methodologies that focus on practical application of equipment and skills, which is exactly one of the educational methodologies used within CSN's EMS courses. As discussed in Chapter 1, Realistic types like to work with tools and equipment in practical settings and the laboratory component of the course would help fulfill the needs of these students. In addition, instructors should also focus on developing an active social environment that allows student interaction and bonding to fulfill the Social characteristics of the students as this is the predominant personality trait of this particular cohort of students.

One administrative benefit that the researcher was hoping to gain from this study was a way of decreasing instructor-related costs by identifying those students who would most likely NOT be successful in this type of career and/or program. If a clear pattern emerged, students could be advised to possibly seek alternative occupational choices. However, the results of this study were inconclusive but should be further studied. Of the nineteen students who did *not* satisfactorily complete the course, eighteen of these students had different Holland codes. Only two students had a duplicate Holland code, which happened to be RES, the primary code for firefighters.

As result of this study, one thing that was discovered was that the EMS faculty at the College of Southern Nevada does not collect demographic information about its students, nor does the faculty understand the ultimate goals for the students who begin taking EMS courses. Based upon this observation, it is recommended that personnel in the EMS program gather demographical information related to these areas and attempt to implement some form of exit interview of failing students to identify qualitative reasons for students withdrawing from the course.

Recommendations for Further Study

The limited number of students included in the data set limits the scope and recommendations that can be made from this study, however, other findings of this study could prompt additional research areas, including:

1. Examining the two- and three-letter primary Holland code of those EMS professionals who are currently working in the profession and who have already demonstrated successful course completion by previously passing an EMT course.
2. Examining the occupational satisfaction of those EMS professionals who have the primary EMT code of RSI compared to those individuals who do not have the code of RSI.
3. Ascertain if using the Self-Directed Search two-letter codes is selective and valid to be used as a pre-enrollment assessment or advising tool for an EMT-Basic course.

4. Additional studies that look at these and other college completion success factors associated with short-term vocational preparation programs and personality types associated with those vocational fields.

Specific factors relating to college completion as found in the literature review, can assist researchers in formulating a specific approach in identifying other key issues associated with program and/or course completion and satisfaction. Specifically, it is important that students who enroll in programs that lead to credentials other than degrees are understood and the body of knowledge relating to completion and satisfaction of such programs studied.

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