

Author: Schumacher, Kelly, J

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STUDENT'S SIGNATURE: _____

DATE: 12/14/11

ADVISER'S NAME (Committee Chair if MS Plan A or EdS Thesis or Field Project/Problem):

ADVISER'S SIGNATURE: _____

Digitally signed by Carol Mooney
DN: cn=Carol Mooney, o=UW-Stout,
ou=School of Education,
email=mooneyc@uwstout.edu, c=US
Date: 2011.12.14 20:07:15 -06'00'

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Schumacher, Kelly J. *Examining Four High Demand Healthcare Programs at NWTC: Wait Lists and Student Persistence for the Period 2005 through 2010*

Abstract

Retention rates have been a growing concern nationwide as well as at Northeast Wisconsin Technical College (NWTC). Many of the healthcare programs offered by NWTC were high demand with great potential for immediate employment upon graduation. Unfortunately, due to limitations with space, equipment and clinical opportunities, enrollment to these programs had been severely limited, despite high interest. Many students chose placement on wait lists of six months or longer, rather than exploring other program or employment opportunities. There has been little research done regarding those students placed on lengthy waitlists. This researcher investigated the persistence rates for students placed on waitlists for at least six months as well as the overall retention rates for those students who applied for the Diagnostic Medical Sonography, Physical Therapy Assistant, Radiography or Respiratory Therapist programs. The results of this investigation revealed a decrease in the persistence rate while placed on waitlists, however, the investigation also showed a higher than overall college average of retention until graduation in the four specific programs analyzed.

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Chapter I: Background

Career and Technical Education has had a long-standing tradition in the United States. This system was built using the format that Europeans established centuries ago. The primary goal of this educational system was to provide opportunities for students to do career exploration and develop occupational skills for the workplace (Scott, 2004). These institutions were established to provide an environment for any member of the community in which it served to receive simulated job experiences in which the learner could use to prepare to become assets for the economic development in the area. The aim was to vitalize communities, provide a skilled workforce to continue market growths and develop new markets. It was a place to allow members of the community to update skills and knowledge regarding changes in technology and trends (Gordon, 2003). As time moved on, another goal was added for technical colleges to aspire. Technical colleges would also provide opportunities for students to take classes that would allow them to transfer to universities to continue their educational pursuits (Scott, 2004).

The idealistic goal of an institution being able to educate a highly skilled workforce assumed that every learner who entered the doors of a technical college left with a certificate, diploma or degree in hand. It was believed that learners continued their education until they satisfied the necessary requirements of the specific program and were ready to enter the workforce. They acquired the skills and knowledge necessary to make them a competent and contributing employee. According Bailey, Crosta and Jenkins (2006), community colleges were deemed a success if enrollment increased every semester and they could offer opportunities for all students, despite any barriers the student possessed (2006).

Low graduation rates continued to be an area of concern in many academic arenas, and the technical college system was no exception. The Wisconsin Technical College System

(WTCS) including 16 technical colleges and 53 campuses (<http://www.educationsector.org>) had an estimated overall 39% graduation rate for students enrolled in their programs (<http://www.matchcollege.com>). The success of the student population was the ultimate goal of all postsecondary institutions, and the measurement of this success was a critical indicator of institution performance. Failure to graduate had affected learners because it placed limitations on an individual's employment and social opportunities as well as his ability to affect the local economy.

An unskilled and low educated workforce has shown to lead to higher unemployment rates (Merisotis, 2005). With the number of employees ready to leave the workforce due to retirement, there was also an increasing concern that there were not enough skilled workers to replace this group. Student retention has been critical to the postsecondary environment. With the dual mission of CTE, programs which could simulate the real world training of a skilled trade and fostering articulation to four-year institutions, low retention and graduation rates did not allow for either goal to be accomplished. It was imperative that technical colleges set up steps to combat this issue and provide increased opportunities for CTE students to earn credentials. It was necessary to find strategies to retain students and increase their level of achievement.

The success of the student population had been the ultimate goal of all postsecondary institutions, and the measurement of this success was a critical indicator of institution performance. Failure to graduate affected learners because it limited an individual's employment and social opportunities as well as his ability to make a positive impact on the economy. At this time, graduation rates were used extensively as the measure of success for postsecondary institutions.

The Higher Education Act was amended and became the Student Right-to-Know and Campus Security Act of 1990. Within this report, graduation rates data for each college became easier to access. This brought colleges under greater scrutiny (Bailey, Calcagno, Jenkins, Leinback, & Kienzl, 2006). With this information readily available, students and their respective parents could analyze and compare graduation rates among colleges and they could choose a college with a higher completion rate. Individuals were discouraged from attending an institution based on this data alone. However, lengthy program waitlists may also deter students from applying to a college, thus reducing the possible number of full time equivalents (FTEs) that a college campus may declare for funding allocations. Reduced funding had a direct impact on the college's ability to provide programs as well as student support services for those students who chose to increase their skills in order to enter the workforce or retain their current employment.

However, what about those students who passed entrance exams and completed program requirements but were told that they were not able to begin their education for 6 months or longer? Did these students persist until they matriculated into their intended programs? Were these students eventually able graduate from their intended programs? At this time, there had been very little focus on those students that were placed on lengthy program wait lists. It was not known if there were resources or even options for these pre-program students. Could two-year colleges do anything to assist students who have been delayed in starting their education to ensure their persistence into their intended program?

The research was conducted at Northeast Wisconsin Technical College (NWTC), a two-year technical/community college located in Green Bay, Wisconsin. NWTC is one of 16 technical colleges included in the WTCS. According to NWTC's website, approximately 42,000 students attended at least one class on any of the three campuses or six regional learning

centers located throughout the Northeast Wisconsin district, equating to approximately 7,000 FTEs (<http://www.nwtc.edu/aboutus/Pages/home.aspx>). NWTC offered students the choice of over 100 degrees, diplomas or apprenticeships. There were also over 80 different certificate options as well as 28 colleges and universities that have established transfer agreements with NWTC (<http://www.nwtc.edu/aboutus/Pages/home.aspx>). The students who attended classes at NWTC were ages 18 and older, from a variety of ethnicities as well as previous educational experiences. Some students came to NWTC directly from high school, while others had been in the workforce for many years and chose to attend NWTC for additional training for continued employment or for re-training for entry into a new field.

In the mid-2000s, several healthcare programs were developed at NWTC in order to meet the increasing demand for skilled healthcare workers. One such example of a high demand program, yet one that has a considerable wait time from application to program enrollment is Diagnostic Medical Sonography developed in 2003. The Diagnostic Medical Sonography (DSM) program is a two-year, two summers, six-semester program. Students who are interested in this program are required to complete 70 credits with a minimum grade of a “C” in all core courses. Upon completion of this program, graduates perform routine sonographic (ultrasound) examinations of the body to include the abdomen, small parts, obstetrics and gynecology. Graduates have also worked closely with physicians and assisted in the performance of invasive procedures (NWTC College Catalog, 2011). The Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredited this program (NWTC College Catalog, 2011). Graduates from the DSM program are also qualified to take the Obstetric/Gynecology, Abdomen, and Physics Boards through the Association of Registered Diagnostic Medical Sonographers (ARDMS) (NWTC College Catalog, 2011).

The Radiography program is another program offered at NWTC that follows a competitive application process. Radiography, which began offering program classes in 2003 (V. Csida, personal communication, September 8, 2011) offered graduates opportunities to work in a variety of health care settings including clinics, hospitals and private practice physician's offices. Graduates of this program "perform routine radiographic imaging of the body, work closely with physicians and may assist in the performance of invasive procedures" (Radiography NWTC brochure 2011-2012). This program is accredited by The Joint Review Committee on Education in Radiologic Technology (NWTC Course Catalog, 2011). Once a student completed this program, they were eligible to take the American Registry in Radiography Technologist (ARRT) Examination (NWTC Course Catalog, 2011).

The Physical Therapy Assistant (PTA), which was developed and open to students in 2008, is another example of a program created by NWTC in response to an increasing need within the local community. The PTA program is an associate of Applied Science Degree. Students can expect this five-semester program to take at least two years, including one summer. The student is required to take 70 credits, and must achieve at least a "C" in all core program classes. This skilled position employs graduates who assist physical therapists in providing physical therapy, performs physical therapy interventions and related tasks as well as carrying out operational functions, makes modifications within the scope of established plan of care, performs documentation and assessments under the direction and supervision of a physical therapist (NWTC PTA brochure 2011-2012). The PTA program is accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE) of the American Physical Therapy Association (APTA) (NWTC College Catalog, 2011). Graduates are eligible to take the Physical

Therapist Assistant Examination offered through the National Physical Therapy Examination (NPTE) (NWTC College Catalog, 2011).

While the Respiratory Therapist program has been in existence longer than the DMS, Radiography and PTA programs, this program is also included in the list of high-demand healthcare programs. Upon successful completion of this program, students are able to work in a variety of settings and are trained to evaluate, diagnose, treat and rehabilitate patients with chronic and acute disease of the heart and lungs. The Respiratory Therapist program is accredited by The Committee on Accreditation for Respiratory Care (CoARC) (NWTC College Catalog, 2011). Students who have completed this program are eligible to take the National Board for Respiratory Care Credentialing Examinations (NWTC College Catalog, 2011).

The programs previously mentioned along with those healthcare programs already established, worked toward educating and training students to become members of a highly skilled workforce the community required. During this time period, these programs experienced record enrollments, due to the high likelihood of obtaining a job once a student successfully completed the program. However, due to limited space and equipment to train those prospective healthcare employees, those programs experienced lengthy waitlists. Enrollment staff informed students they would not be able to enroll in their program classes anywhere from six months to three years. Lengthy waitlists seemed to be a direct contradiction to the mission of the technical colleges- educate students quickly and get them prepared to enter the workforce, especially in those fields that were in demand.

Statement of the Problem

Retention rates have been a growing concern nationwide as well as at NWTC. However, little research had been completed regarding students who have not immediately matriculated

into their intended programs. As stated before, one of the primary goals CTE established was to educate and train a more skilled workforce for the surrounding community. If these students had not been allowed to start the required training to become a more skilled employee, technical colleges had not satisfied this important goal and thus had not served the local community. The scope of this research included four high demand healthcare programs at NWTC. It was the intent of the researcher to use qualitative research in an attempt to determine the persistence trends of those students placed on wait lists of six months or longer.

Research Objectives

NWTC had implemented potential interventions to improve the first year experiences for those students who chose to attend classes at any of the campuses. Various services were provided to students during their educational journey, once they matriculated into their academic or vocational program. Previous research by Eric Jamelske (2008) indicated there was no one solution was suitable for all campuses. An intervention that may prove effective at a four-year university may be perceived as a limitation or ineffective at a two-year community college. An intervention must be specifically created with the specific student population in mind. Due to the variety of programs as well as the diverse backgrounds of those students who enrolled at NWTC, this task of determining appropriate interventions was daunting. However, the interventions that were being proposed specifically targeted those students that had begun their education – what could be done for those students who were told they needed to wait at least 6 months to begin their educational journey?

The objective of this study was to provide suggestions as to areas in which NWTC could improve the matriculation rates within not only the healthcare program, but also programs in general.

The goals of this research were to:

- determine if the application process that was currently in place at NWTC played a role in deterring students from persisting until they were allowed entry into their intended healthcare program
- determine the average wait time for students before they were allowed to begin enrolling in program classes
- provide suggestions for possible interventions.

Definition of Terms

Active in Term: The number of students still considered enrolled and actively making progress through the course plan for the program of interest.

Benchmark: Score required for admittance into a financial aid eligible program at NWTC.

Enrollment: The number of students enrolled in at least 1.0 credit within the terms being investigated. These students may or may not be enrolled in courses related to healthcare business services.

Graduates: The number of students that received a credential (degree, certificate or diploma) at the conclusion of a selected term.

Initial Cohort: The number of students that were matriculated and enrolled past the date of record in the program of interest in the terms selected.

Intervention: Any program implemented by a community college, technical college, or university that prevents a student from withdrawing from a program. Interventions can include: orientations, learning communities, regular “check in” meetings with faculty or advisors, etc.

Persistence: The continued enrollment, by a student, from one semester to the next subsequent semester. There is no lapse in continued progress through the program.

Retention Rate: The percentage of the initial cohort of students that enrolls in a selected term. Retention rate is calculated as the number of enrollments plus the graduate total divided by the initial cohort.

Successful Completion: The attainment of a letter grade of a “C” or better.

Underprepared Learner: Students who may not be academically prepared or emotionally ready to undertake the rigors of a post-secondary program. They may lack adequate skills in reading comprehension, writing skills and/or math skills. Admission tests can be used to determine academic preparedness.

Waitlist: Students who are informed they cannot begin their programs at the start of their intended semester. For the purpose of this research, a wait list will be duration of at least 6 months after the start of the next program start date.

Withdrawals: The number of students that choose to never begin their education at NWTC.

Assumptions/Limitations

It was the assumption of this researcher that, by choosing to focus the scope of this study on four high demand healthcare programs at NWTC, the impact of the underprepared learner would be reduced. The healthcare programs at NWTC have had the highest benchmarks (grade equivalency for reading, language and math) required of any program at NWTC. These programs also had an extremely competitive application process. The applicant was required to write an essay, in which they detailed their knowledge of their desired profession and any experience they may already have had within the healthcare profession. A grade of a “C” or better in a chemistry

course was required before an application was processed. Due to a yearlong wait list for some of the programs, the researcher assumed the student was aware of the expectations and requirements of these programs and was ready to undertake the associated rigors.

This assumption was also a potential limitation to the applicability of the findings of this research. The remainder of the programs and certificates offered by NWTC did not have benchmarks as high as healthcare programs. Students enrolled in other programs may not be as academically prepared to continue in certain programs. Those programs may have to consider academic readiness and the requirements of the programs to determine whether or not a possible change in entrance requirements is necessary. Academic preparedness was not included in the scope of this research.

There had been very limited research done in the area of persistence among students placed on wait lists before entry into programs. In order to obtain an accurate picture of those students, it was imperative that the researcher was able to obtain as much open and honest feedback from those students who chose not to continue their education at NWTC. It was the responsibility of this researcher to ensure complete confidentiality to those students who chose to participate. Lack of participation was also a potential limitation to this study.

Chapter II: A Literature Review

Student retention has always been critical to the postsecondary environment. Career and Technical Education (CTE) programs have had dual missions: real-world training of a skilled trade and to foster articulation to a four-year institution. In order to continue training a more highly skilled workforce required by the current economy, students had to persist through their programs of choice until they earned a credential. Low retention and graduation rates did not allow either of those goals to be accomplished. Northeast Wisconsin Technical College had an overall graduation rate of 39% (<http://www.matchcollege.com>). It was imperative that steps be taken to combat this issue and set CTE students up for success. It was necessary to find strategies to retain students and increase their level of achievement.

The success of the student population was the ultimate goal of all postsecondary institutions, and the measurement of this success was a critical indicator of institution performance. Failure to graduate may have affected learners by limiting an individual's employment and social opportunities as well as the ability to make a positive impact on the local community and economy. An unskilled and low educated workforce has shown to lead to higher unemployment rates (Merisotis, 2005). According to the US Bureau of Labor Statistics, the unemployment rate for the year 2009 for those who acquired only a high school diploma was approximately 9.7% while for those who attained an associate's degree, the rate of unemployment hovered around 8.0% (http://www.bls.gov/spotlight/2010/college/data.htm#cps_unemp). According to the 2010 NWTC Graduate Follow-Up Report, 88% of graduates from NWTC were employed within six months of their graduation and 76% of those graduates were working in fields that were directly related to their degrees (NWTC Graduate Follow-Up report, 2010). Research also indicated that

children of low-educated parents had a lower tendency to continue their education after high school (Carnevale & Desrochers, 2004). At this time, graduation rates were being used extensively as the measure of success for postsecondary institutions. Due to an increasing emphasis that accrediting agencies were placing on retention, technical colleges increased their focus on student retention and graduation rates (McMurtrie, 2000).

There was also a discrepancy in the earnings of those with only a high school diploma as compared to someone with some college or at least a two-year associate's degree. It has been a common assumption that a higher skilled workforce would have a positive impact on the economy in the surrounding area. As previously stated one of the goals of career and technical education was to educate and train potential employees and transform them into a more highly skilled workforce that could provide a direct influence on the communities it serves. Seventy-three percent of the graduates from NWTC stayed and contributed to Northeast Wisconsin's economic development (NWTC Graduate Follow-Up Report, 2010). According to a report by the US Bureau of Labor Statistics posted in 2010, the weekly earnings of a person 25 and older with only a high school diploma was approximately \$626 per week as compared to \$726 for someone 25 or older with some college or an associate's degree (http://www.bls.gov/spotlight/2010/college/data.htm#cps_unemp).

There were several theories among educators as to why students chose not to persist in an academic program, once a student has begun to take program classes, until graduation. Education professionals indicated that students stated that their reasons for low academic success were often (a) limited hours to study due to outside commitments, (b) being academically underprepared, (c) lack of career research as well as limited knowledge about program requirements and expectations, (d) students feeling isolated within the college (Bailey, 2005).

Millions of dollars have been spent on implementing processes as well as programs that were believed to combat these concerns thus improving overall retention rates. The questions that this study attempted to answer: Were college's perceptions of student issues accurate? Were the programs and processes being developed and created actually making a difference for the student?

Students at risk

Students who entered the technical or community colleges were as varied as the programs that have been offered by the institutions. No longer were the classrooms full of 18-year-old Caucasian males from upper class families. The students who have enrolled in technical or community colleges more recently were female, often from low-income families, and may be considered first generation college students, students with parents that have had no or limited experiences with post-secondary institutions, and were age 24 or older (Bailey, 2005). Many of these students have had lengthy gaps in which they were not enrolled in any type of educational classes or training. These students may have been working, supporting a family, concerned about childcare issues or a pending job loss. They may not have been able to devote a substantial amount of time to the pursuit of earning a degree. They were more focused on acquiring the job skills required for them to seek new employment or retain a current position (Horn, Cataldi, & Sikora, 2005). They may have entered the community college with low placement scores that could be indicative of future struggles with coursework. These students may also have had poor educational outcomes in their previous attempts with school (Spellman, 2007). These students were not only academically underprepared, but may have also lacked the self-confidence required to successfully complete post-secondary work.

Technical and community colleges were also noticing an increase in the number of dislocated workers enrolling in programs. Due to limitations placed on the students by the funding sources they received, there were limited opportunities for career research. These students were given a list of fields in which there was anticipated opportunity for employment. Students were able to receive funding for those programs only (S. Schuster, personal communication, September 23, 2011). Special consideration needed to be given to those adults who returned to campus after a long break in their educational experiences. There have been few studies that researched the difference in retention among adult students and those students who entered college immediately following graduation from high school. However, Sorey and Duggan found that there are different predictors of success for these two cohorts (2008). In their study, Sorey and Duggan used two random samples. Their research was done at a large public community college that had more than one campus. Their community college was located in the Southeastern part of the United States. The first group was 350 randomly selected adults seeking degrees. This group was aged 25 years or older. The second group of 350 randomly selected students of traditional college aged students seeking to earn their degrees, ages 18 – 24. They found that for those returning adults, the more they felt part of the campus community, the more likely it would be that they would persist. This research also noted that positive family as well as peer support for the traditional aged student was a likely predictor of persistence. These findings may indicate that positive relationships formed while on the campus are as important to a student's decision to complete a program as is their academic progress. Those relationships may have encouraged students to seek out additional assistance, such as tutoring or peer supported study sessions.

In this current economy, many high schools have been dealing with substantial cuts to budgets. Administrators have been forced to make cuts to areas that may not directly influence a student's direct learning of state mandated curriculum. As a result, high school students were not doing the career research required to be adequately prepared to choose a program. Often, career research had been done in a very limited capacity during high school. Students came to college with very little idea as to what they would like to do or what their intended profession actually did. There had been varied research that had indicated that those who enrolled in post-secondary institutions with little thought regarding their intended profession not only increased the time it may take for them to successfully complete their program, but those students were also at an increased risk for withdrawing completely from school (Feldman, 2005). In another study on the topic of career research, Yorke, found there were three main reasons that students gave for withdrawing from programs before successful completion: (a) chose the wrong field, (b) wasn't committed to fully engaging in their studies, or (c) the program was not what they thought it would be (Yorke, 1998). Future research may indicate that more work is needed to prepare students for their programs as well as career choice. Much of the research has examined those cohorts that are accepted into programs and have begun their coursework. Unfortunately, there has been little to no research as to the effects these risk factors may have had on those students who were not immediately allowed to begin coursework, despite being eligible for their intended programs.

The Importance of Healthcare Program Retention

In no other field was the importance of highly skilled workforce more evident than in the field of healthcare. Wolgemuth (2009) has stated that the increasing age of the baby boomers will continue to place a demand on the entire healthcare system. According to the Bureau of

Labor Statistics, between the years 2008-2018, the healthcare field will create 3.2 million new jobs (<http://bls.gov/>). Many of these jobs will require less than a 4-year degree, but will require some additional training, certification or education. Technical colleges have accepted this challenge of educating this new and dynamic workforce by implementing new and relevant programs to match the ever-changing needs of the population. However, just because programs were developed and offered, did not mean that students completed those programs. In addition, just because programs were developed and offered, did not necessarily mean that all applicants who were interested and eligible to begin program course work were allowed to begin their academic journey. The questions needed to be asked: Why? What could be done to increase the number of students allowed to begin the coursework? Would an increased number of program students also increase the likelihood of a more qualified and skilled workforce?

The majority of the research had been done using nursing students and the retention of this population. While the shortage of nurses was well known, according to the Bureau of Labor Statistics, current trends indicated that a skilled workforce in the field of healthcare, especially those previously listed by this researcher, was needed (<http://www.bls.gov/>).

According to the most recent report published by the Bureau of Labor Statistics, jobs in the field of Diagnostic Medical Sonography (DMS), should be favorable in the future with a faster than average employment growth anticipated, with a growth rate of 18% predicted through 2018 (<http://www.bls.gov/oco/ocos273.htm>). This report predicted that as hospitals become more cost conscious, the field of DMS would become a more frequently used safer and less expensive alternative to other radiological procedures (<http://www.bls.gov/oco/ocos273.htm>). This report indicated that this job might require moving in order to find full-time employment (<http://www.bls.gov/oco/ocos273.htm>). In a report issued by the Bay Area Workforce

Development Board, it has been projected that the Brown County areas could experience an increase of 9.1% of job openings in the surrounding counties of Door, Florence, Kewaunee, Manitowoc, Marinette, Menominee, Oconto, Shawano, and Sheboygan (http://dwd.wisconsin.gov/oea/employment_projections/bay_area/). NWTC and its campuses and regional learning centers serve these counties. The 2010 Graduate Statistical Data Sheet, provided by NWTC as a graduate follow-up information sheet, reported that there were 11 jobs, full and part-time posted in this field (NWTC graduate follow up, 2010).

While median salaries and type of facility a graduate may work in varied state by state, the U.S. Bureau of Labor Statistics reported that a Diagnostic Medical Sonographer could experience a 0.4% increase in wages (<http://www.bls.gov/oes/current/oes292032.htm>). In trying to determine the salary of those that have graduated from the DMS program, the 2010 Graduate salary history was unavailable, however the report issued by the Bay Area Workforce Developments listed salaries in Diagnostic Medical Sonography in the areas served by NWTC in the range of \$27.94/hour - \$38.04/hour (http://dwd.wisconsin.gov/oea/employment_projections/bay_area/).

The DMS program at NWTC began accepting students during 2003. This program has a highly competitive application process, which only accepts applications during a one-week period, the first full week following Labor Day. The application required that the ten successful applicants must be ready to begin classes the first summer following accepted application (A. Meltesen, personal communication, November 3, 2011). According to the program brochure distributed by NWTC to prospective students, there are several steps that a student must complete before their application will be processed. To submit a complete application, the student must: fill out an application, submit their high school transcripts or equivalent, take the

Accuplacer or ACT assessment and obtain the required benchmark scores. Those Accuplacer scores for this specific program are: reading comprehension 90; arithmetic: 70; sentence skills 84; algebra 63 or a minimum standard composite score of 22 on the ACT, completed two semesters in high school, or one semester in college of algebra, biology and chemistry with a “B” or better and be enrolled in physics at the time of application. With their application, the student must also submit: three references from professional or academic experiences submitted on NWTC forms, and an essay of no more than 1000 words completed on campus in the Assessment Center. This essay must explain why they are interested in this program, and how their knowledge of the profession, as well as any experience they have in a healthcare facility, specific skills and duties of a sonographer and the personal characteristics that make them a good candidate for this program.

A selection committee reviews all applications for DMS. Those candidates were ranked according to assessment, math/science, essays and references. Those candidates who rank the highest are then put on the program waitlist (NWTC DMS brochure, 2011-2012). For students to be eligible for entry into the DMS program, they must have completed two semesters of high school physics or one semester of college physics, with a grade of “B” or better, attended the mandatory spring program orientations, completed a physical examination three months prior to entering the program as well as provided verification of current immunization records, Caregiver Background Check and completed a mandatory four hour job shadow.

The job outlook is equally favorable for graduates of the Radiography program. According to the U.S. Bureau of Labor Statistics, a 17% increase of job openings is expected by the year 2018. Those who are trained in more than one imaging procedure (CT, mammography, MRI) will have more job opportunities (<http://www.bls.gov/oco/pdf/ocos105.pdf>). Locally, the

Bay Area Workforce Development Board estimated a possible 13.7% increase in positions for radiographers (http://dwd.wisconsin.gov/oea/employment_projections/bay_area/).

A 2010 Graduate Statistical Data Sheet, provided by NWTC, reported that there were 53 jobs, full time and part time, posted at NWTC for this profession.

Like the DMS field, pay rates for Radiographers varied greatly from state to state. According to O*Net online, a website that reports information regarding professions, a 2010 median salary of \$54,340 was reported to be the nationwide average (<http://www.onetonline.org/link/summary/29-2034.00>). The Bay Area Workforce Development Board reported that the range of salaries for the areas served by NWTC was equal to \$21.21/hour - \$27.76/hour (http://dwd.wisconsin.gov/oea/employment_projections/bay_area/), while the 2011-2012 Radiography brochure distributed by NWTC, listed an estimated median starting salary of \$38,076 (NWTC Radiography brochure 2011).

The Radiography program also has a competitive application process. Applications are accepted for a one-week period and allow fourteen students to begin classes during the summer session. Up to 21 people could be placed on the waitlist after the application process closes. Because students have qualified for the program does not mean an automatic acceptance (B. Stumpf, personal communication, November 3, 2011). In order to be eligible for this program, there are several requirements that a prospective student must complete. They must submit an application as well as a copy of their high school transcript. Applicants must have completed either the Accuplacer entrance exam or ACT. Those scores must be within 3 years of application in order to be accepted. Benchmark scores must be met in order for the application to be processed. Those scores are: reading comprehension 90; arithmetic 90; sentence skills 94; algebra 65. If the student submitted an ACT score those test results must be a minimum standard

composite score of 22. Applicants must also have taken either two semesters of algebra and chemistry in high school, or one semester of algebra and chemistry in college. The student must have completed those courses with a “C” or better.

Applicants interested in the Radiography program must also include with their applications at least three references from professional or academic experiences submitted on NWTC forms as well as provide a 1000 word essay that must be completed on NWTC campus in the Assessment Center. This essay must describe the students’ interest in the field and how their knowledge of the professions, experience in healthcare, specific skills and duties of a radiographer, and characteristics that make them a good candidate for the program. The applications are reviewed by a selection committee. Applicants are ranked according to: assessment, math/science, essays and references. The highest-ranking candidates are offered a place on the program waitlist while remaining candidates will have the opportunity to re-apply for admittance the following year.

According to the US Bureau of Labor Statistics, the need for Physical Therapist Assistants is also expected to increase during the next five to ten years. This increase will be due, in part, to the large number of Baby-Boomer generation patients that physical therapists and their assistants will be expected to manage and help recover from injuries, surgeries or diseases. (<http://www.bls.gov/oco/pdf/ocos167.pdf>). It is estimated that there will be 85,000 jobs for physical therapists assistants in the year 2018 as compared to 63,800 positions in 2008. This is a 35% increase in physical therapist assistant position over a ten-year period (<http://www.bls.gov/oco/pdf/ocos167.pdf>). The outlook for this field is projected to be good in Brown County as well as other counties within the NWTC district. According to a report published by the Bay Area Workforce Development, it is estimated there will be a 21.4%

increase in jobs within this field in Brown County and the surrounding NWTC district (http://dwd.wisconsin.gov/oea/employment_projections/bay_area/).

According to the NWTC 2010 Graduate Success Information brochure published by the Career Center at NWTC, there were approximately 551 jobs posted within the Physical Therapist Assistant field. As of May 2010, nationwide, the national mean annual wage for Physical Therapist Assistant employees was \$49,810 (<http://www.bls.gov/oes/current/oes312021.htm#st>), a report published by the Career Center at NWTC reported that graduates of the PTA program indicated a median annual wage of \$40,044 for a starting salary.

Like the DMS and Radiography programs, the PTA program has a considerable application process. This program, however, was not as competitive in its application process as the DMS and Radiography programs. Those who are interested in becoming a physical therapist assistant must complete the following: a NWTC application, submit their high school transcripts, complete the Accuplacer assessment or ACT assessment. ACT scores must be within 3 years of application in order to be accepted. Student must have completed one year of algebra with a “C” or better or attained a score of “60” or better on their Accuplacer assessment and completed one year of chemistry with a “C” or better. If the applicant took two semesters of chemistry while in high school, a grade of “C” or better is required. Students who also provide verification of completion of general anatomy and physiology with a grade of “B” or better will receive priority standing among that particular years pool of qualified applicants. While the application process for the PTA program is not as competitive as the DMS program or the Radiography program, prospective students have been informed of the potential for at least a six-month wait time before being accepted into this program (K. Kolarik, personal communication, September 23, 2011). In addition, due to previous agreements established by specific

communities, Manitowoc or Sheboygan residents must fill at least six of the possible 32 full-time or part-time slots available for students (L. Derenne, personal communication, November 2, 2011).

Respiratory Therapist graduates are also in demand. According to the most recent report published by the US Bureau of Labor Statistics, it is estimated that there will be a 21% percent increase in job availability nationwide, during the period of 2008 – 2018. While there were 105,900 jobs in this field in 2008, it was projected there will be 128,100 jobs in the year 2018 (<http://www.bls.gov/oco/ocos321.htm>). According to the Bay Area Workforce Development, a report that includes Brown County as well as counties in the NWTC district, it is estimated that there will be a 22.7% increase in the demand for respiratory therapists during the same ten-year period (http://dwd.wisconsin.gov/oea/employment_projections/bay_area/). Within the NWTC Career Center, there were 121 job postings for the graduates within the Respiratory Therapist program (NWTC Graduate Success Information, 2010).

Although respiratory therapists work in a variety of setting as well as a variety of work schedules, the national estimate of a mean annual wage for this occupation is \$55,200 (<http://www.bls.gov/oco/ocos106.htm>). The salary in Brown County and surrounding communities ranges from \$21.41 per hour - \$28.11 per hour (http://dwd.wisconsin.gov/oea/employment_projections/bay_area/) while the annual starting salary median rate was listed as \$38,142 (NWTC Graduate Success Information, 2010).

Students who submitted an application to the Respiratory Therapist program must have completed an application, included a high school transcript and taken the Accuplacer or ACT exam within the last three years. The applicants must have completed two semesters of high school or one semester of college in the following courses: algebra, biology, chemistry and

advanced math (or physics). These courses must have been completed with a “C” or better. If the interested applicant submitted verification of successful completion of general anatomy and physiology with a “B” or better, the applicant received priority standing among that years applicant pool (Respiratory Therapist, NWTC brochure 2011-2012).

Prior to program entry, prospective students must have attained Accuplacer scores of: reading comprehension 90; arithmetic 90; sentence skills 94; and algebra 60. If the student took an ACT exam, the student must have received a composite score of 20. Students must have attended the mandatory spring program orientation, completed a physical examination three months before beginning classes as well as provided documentation of current immunization records. Students must also have completed an American Heart Association Health Care Provider CPR course as well as maintained their certification. Students must also have submitted Caregiver Background Check paperwork. For the Respiratory Therapist program, a four hour job shadow was strongly encouraged (Respiratory Therapist, NWTC brochure 2011-2012). However, this four-hour job shadow was not mandated as it was in previously described programs. Prospective students of the Respiratory Therapy program are told that it is possible that, despite successful completion of all requirements of this program, there may be a 6-month or longer wait period before being allowed to begin their program coursework (E. Blaney, personal communication, September 25, 2011).

Retention rates have been a growing concern nationwide as well as at NWTC. However, little research has been done regarding those students who have not matriculated into their intended programs immediately upon completion of entrance requirements. As stated previously, one of the primary goals that CTE established was to educate and train a more skilled workforce for the surrounding community. If students were not allowed to start the required training to

become a more skilled employee, technical colleges have not been satisfying this important goal and thus not serving the local community.

Chapter 3: Methodology

With the current downturn in economic growth, high unemployment rates, as well as the increased demand for a more skilled and efficient workforce, the need for technical and community colleges to train and grant credentials to qualified students was considered essential, not only for the technical colleges but for the communities it served. Unfortunately, with a current overall graduation rate at NWTC of 39% (<http://www.matchcollege.com>), there was an indication that a significant amount of work needed to be done.

Retention rates have long been a growing concern nationwide as well as at NWTC. However, there had been little research done regarding a potential group of students. Historically, there have been potential students, who despite successfully completing all application requirements, have not matriculated into their intended programs. One of the primary goals that CTE established had been to educate and train a more skilled workforce for the surrounding community. If these students were not able to start the required training to become a more skilled employee, technical colleges have not satisfied this important goal and thus have not served the local community and its taxpayers.

NWTC was examining ways to analyze student retention as well as developing interventions in order to assist students during their educational programs. The goal was to increase the number of credentialed students who were able to join the workforce. However, administrators had rarely examined the prospective students who have successfully completed applications, have met the program requirements, but have not officially been accepted into programs. In the past, large groups of potential students waited at least six months before starting their coursework.

The objective of this study was to provide suggestions as to areas in which NWTC can improve the matriculation rates within not only the four high demand healthcare programs, but also possibly, programs in general. The goals of this research were to:

- determine if the application process currently in place at NWTC played a role in deterring students from persisting until they were admitted into their intended healthcare program
- determine the average wait time for students before being allowed to begin program classes
- provide suggestions for possible interventions that could be implemented for students while on the waitlist for their intended healthcare program

It was the intent of the researcher to use a multi-step research approach to answer these questions. Utilization of existing data in the form of admissions records and student information coupled with follow up telephone calls to randomly selected students was the research method employed. After reviewing student records, a database was created for those potential students whose records showed no activity since they applied to their intended program.

Selection and Description of Sample

NWTC is a two-year technical/community college located in Green Bay, Wisconsin. NWTC is one of 16 technical colleges included in the Wisconsin Technical College System. NWTC offers students the choice of over 100 degrees, diplomas or apprenticeships. There are also more than 80 different certificate options as well as 28 colleges and universities that have established transfer agreements with NWTC (<http://www.nwtc.edu/aboutus/Pages/home.aspx>). The students who attend classes at NWTC were ages 18 and older, came from a variety of ethnic backgrounds and have varied previous educational experiences. Some of these students came to NWTC directly from high school, while others have been in the workforce for many years and are coming for additional training to enhance employment or for re-training for entry into a new field.

The scope of this research included four healthcare programs at NWTC: Diagnostic Medical Sonography; Radiography, Physical Therapist Assistant, and Respiratory Therapist. The four programs had high demand for graduates; however, many of the posted positions went unfilled. It was the intent of the researcher to use a multi-step approach in order to obtain a pool of prospective students to survey. If a student's academic records showed no activity after they were placed on a waitlist for one of the aforementioned healthcare programs at NWTC, they were eligible to be included in the survey. Once a pool of student had been established, the researcher then utilized a qualitative survey during the research process and attempted to determine the persistence records of those students placed on waitlists of six months or longer. The researcher first analyzed those applications of students who intended to enroll in healthcare programs between the years 2005 – 2010. The researcher, using the PeopleSoft database, software utilized by NWTC to track student academic progress, bio/demographical data, financial records, etc., determined the actual length of wait time before a student matriculated into their intended program, whether or not they matriculated into their intended program, or showed no activity on their academic records. To establish the records of those students who submitted applications to healthcare programs at NWTC with the intention to enroll in classes at the next available start date, the researcher used a query through PeopleSoft. The query, NWTC_MATRS_CMTL, was used to generate a list of all applicants. This query was run for terms beginning summer 2004 and continuing through spring 2010. That list was analyzed and only those students making applications to one of the four specific healthcare programs were included in an excel spreadsheet.

Once the list of applicants was developed, the researcher used the query, NWTC_DEGREE_DATE_AWARDED, which had already been developed by staff at NWTC.

The information generated by this query listed those students who received credentials from NWTC and the date those credentials were received. The researcher crosschecked those applicants with those who eventually received a credential. There were two reasons this for this crosscheck:

- To determine the average length of time placement on the wait list and the start date for enrollment in coursework and eventual earning of a credential.
- To develop a pool of those prospective students who never matriculated into their intended program.

Once a pool of students who showed no academic activity at NWTC was established, the researcher attempted to contact as many of those students as possible. The researcher placed phone calls to those students whose records showed no activity on their academic records to determine the educational outcomes for those particular students.

Instrumentation

To answer the questions of this research, the researcher made phone calls to students whose academic records showed no activity after they were placed on a healthcare program waitlist. A questionnaire was developed that included the questions:

- Why did you not take any classes at NWTC while on the wait list?
- Do you intend to pursue your desired healthcare program at NWTC? If not, do you intend to pursue your desired healthcare program at another post-secondary institution?
- What factors went into that decision to attend another post-secondary institution: Cost? Less wait? Different program requirements?
- If classes were offered that would assist you in preparing for program entry, would you take those classes? See Appendix A for complete questionnaire

This questionnaire was developed specifically for the purpose of this particular research project. It was developed with the population that NWTC serves as well as questions that could

elicit responses that would most benefit NWTC in assisting this specific population of prospective students.

Data Collection

To answer the research questions, the researcher had to analyze the applications for the four selected health programs as a whole. During this five-year period, applications for the Diagnostic Medical Sonography and Radiography programs were accepted during a one-week period, beginning the first Monday after Labor Day. Applications for the Physical Therapist Assistant and Respiratory Therapy program were accepted year round. Applications were then processed, eligibility was determined and a program waitlist was established for the next start date of the program, usually within the next year. However, this could mean at least two semesters elapsed before the prospective student was allowed to begin taking program classes.

Programs were eliminated from the scope of this research due to no wait lists or low demand for graduates. The programs not included in this research were: Dental Hygienist, Clinical Laboratory Technician, Nursing – Associate Degree, Nursing Assistant, and Practical Nursing. For the purpose of this research project, the Healthcare Business Services and Health Information Technology programs were not examined. These two programs included many prospective students on a lengthy wait list however many of those prospective students did not intend to graduate from Healthcare Business Services or Health Information Technology programs. Anecdotal evidence had indicated that students intending to matriculate into other healthcare programs have often used these programs to begin taking general healthcare core classes without being accepted into the intended program. Students must be matriculated into a health care program prior to being allowed enrollment in some core classes specific to the healthcare field.

Next, spreadsheets created in Microsoft Excel, were developed, listing those students who were eligible for their applied program but were not yet able to start classes. The spreadsheet was used to sort data. The information that was compiled included, student NWTC identification number, student first and last names, last recorded contact information provided by student, intended program, application date, program start date, graduation date, and credential earned.

Once individual information was gathered and sorted, the researcher examined graduation lists, starting with December 2006. While the researcher was aware that this would only have allowed one year for a student to have successfully completed an associate degree program, the researcher needed to verify that any graduates had not taken classes before their application was formally accepted. The researcher collected this data by running a query, NWTC_Degree_Date_Awarded. All applicants who were listed on the spreadsheet were checked for eventual graduation date, if applicable. Those prospective students who eventually matriculated into and graduated from a program would have program start dates analyzed and a length of wait time before enrolling into their program was calculated.

After all crosschecking had been exhausted; those students with no graduation date recorded were contacted by the researcher and asked to complete a phone interview to assist the researcher in determining their educational outcome.

Data Analysis

The completed phone surveys provided qualitative responses that attempted to determine if there were consistent messages or areas of concern expressed by the students contacted. The researcher calculated averages of responses provided by students in an attempt to determine correlations between students who have successfully matriculated into the intended program and

earned a credential and those who continued to wait until they were allowed to begin their education in their intended program. This data will be reported in chapter four of this paper.

Limitations

Among the programs that were analyzed for matriculation rates, it was difficult to find an accurate number of students who actually intended to complete the program. There were also numerous students who were placed into the healthcare business services program in order to receive funding until those students could be granted entry into their intended program. This placement was due to federal financial aid restrictions. Students could not declare any major in order to receive financial aid while they were completing course work that did not require acceptance into their intended program, such as those classes classified as “introduction to” a specific field.

There were also limitations with the type of reporting utilized by NWTC. Currently, a PeopleSoft report or query must be developed and ran in order to receive specific information. At this time, this system is not able to drill down to specific details about specific individuals and their academic intentions. Because this type of research had not previously been attempted at NWTC, there have not been databases developed that would provide the researcher with the information being sought. During data analysis, this researcher noted that the reports generated by NWTC to determine matriculation dates did not fully drill down to the detail anticipated. At this time, due to the difficulty in determining actual length of time utilized to complete programs for specific individuals has too much variance and is not currently tracked by any query or report currently utilized by NWTC. Students may not have followed the prescribed course load and may have required more time to complete their program.

There were also limitations as to the actual number of prospective students who chose to participate in this survey. There were also barriers encountered that prevented the researcher from being able to directly speak with the individual. The researcher encountered disconnected phones or students who moved and did not leave a new phone number with NWTC.

It may not be possible to transfer the data and information gathered during this research project to other programs or even to other institutions. Every institution serves a diverse population and the results that are found by surveying those healthcare waitlist students at NWTC may not be valid responses that can be applied to other institutions. It must be noted that this researcher intended to specifically limit the scope of this research to the healthcare programs at NWTC. In order to be placed on the waitlist for a healthcare program at NWTC, students must successfully obtain benchmark scores specifically required by their program of choice. Applications were denied until benchmark scores were reached. This requirement is in place to ensure that students were academically prepared in the areas of reading, writing and math skills in order to begin the rigors of the healthcare program coursework.

Chapter IV: Results

NWTC was looking for ways to analyze student retention and to examine ways that interventions could assist students in order to increase the number of credentialed students to join the workforce. However, there has been limited focus on those prospective students who had successfully completed applications, met the program requirements, but, due to circumstances beyond their control, waited at least six months before starting their coursework.

The scope of this research included four healthcare programs at NWTC: Diagnostic Medical Sonography; Radiography, Physical Therapist Assistant, and Respiratory Therapist. These four programs had high demand for graduates; however, many of the posted positions went unfilled.

The objective of this study was to provide suggestions as to areas in which NWTC could improve the matriculation rates within not only the four high demand healthcare programs, but also possibly, programs in general. The goals of this research were to:

- to determine if the application process that is currently in place at NWTC played a role in deterring students from persisting until they were admitted into their intended healthcare program
- to determine the average wait time for students before they were allowed to begin program classes
- to provide suggestions for possible interventions that could be implemented for those students while on the waitlist for their intended healthcare program

It was the intent of the researcher to use a multi-step research approach to answer these questions. Utilization of existing data in the form of admissions records and student information coupled with follow up telephone calls to randomly selected students was the research method employed. The researcher examined student records to determine which records showed no academic progress since the submission of an application and eligibility was determined. Once a

pool of students who showed no activity on their academic records was established, the researcher utilized a qualitative survey during the research process to determine the persistence rates of those students placed on waitlists of six months or longer.

Persistence Rates versus Graduation Rates

Overall, the four high demand health care programs at NWTC had graduation rates that were higher than the overall NWTC college graduation rate of 39%. The Diagnostic Medical Sonography program had graduation rates of 70% in both 2006 and 2007, 80% in 2008, 90% in 2009 and then a sudden decrease to 50% in 2010. This program did not have students eligible for graduation until 2006. This program was not offered to students until 2003.

The Physical Therapist Assistant program had slightly lower graduation rates when compared to the DMS program. The researcher found those graduation rates to be 62% in 2005, 72% in 2006 and 75% in 2007. This program experienced a decline in its graduation rates in 2008 (50%) and again in 2009 (47%). However, those rates increased to 62% in 2010.

The Radiography program showed a slight increase in the graduation rates over this time period. This researcher found that there was a 50% graduation rate for 2005, a 64% during 2006, an increase to 71% in 2007, a decrease to 57% in 2008 and an increase to 64% in years 2009 and 2010. These rates were higher than the overall graduation at NWTC.

Finally, the Respiratory Therapy program listed its graduation rates as: 67% for 2005, 75% for 2006, 67% for 2007, 63% during 2008, and a slight decrease to 67% in 2009 and 58% for 2010.

The graduation rates for the four analyzed healthcare programs are listed in Table 1.

Table 1

Program Graduation Rates during the period 2005 - 2010

	Diagnostic Medical Sonography	Physical Therapist Assistant	Radiography	Respiratory Therapist
2005	**	62%	50%	67%
2006	70%	72%	64%	75%
2007	70%	75%	71%	67%
2008	80%	50%	57%	63%
2009	90%	47%	64%	67%
2010	50%	62%	64%	58%

***The first eligible class for graduation from the Diagnostic Medical Sonography program was not until 2006.*

Diagnostic Medical Sonography

The Diagnostic Medical Sonography program is a highly competitive program. Students were required to complete applications, obtain high benchmark scores as well as submit references and an essay. This program accepted 10 students each year, with only a summer semester start. As indicated by Table 2, this program had a high percentage of students who were placed on waitlists only to withdraw their applications. The researcher found that during 2005, 62% of applications were withdrawn from the list of eligible students for this program. The year 2006 showed an increase of withdrawn applications to equal 70%. There was a sharp decrease for the next two years, 32% in 2007 and 23% during 2008. Beginning in 2009, all students who successfully met the program requirements were placed on waitlists. This year, 2009, showed a significant increase in the percentage of students who chose to withdraw their applications equal to 83%. A slight increase occurred during 2010 to 86% of all applications withdrawn. Those results are indicated by Table 2.

Table 2

Diagnostic Medical Sonography: Percentage of Students: Percentage placed on Waitlists and Percentage of Applications Withdrawn before Enrollment

	Number of Students who met the program requirements	Number of Students who were placed on DMS waitlist		Number of applications which were withdrawn	
2005	78	N=50	64%	N=31	62%
2006	113	N=99	88%	N=70	70%
2007	50	N=38	76%	N=12	32%
2008	67	N=53	34%	N=12	23%
2009	62	N=62	100%	N=52	83%
2010	74	N=74	100%	N=64	86%

This researcher determined that the average time on the waitlist for this specific program was ten months. During this ten-month period, students were not able to begin any program classes because of their waitlist status. This also prevented those students from receiving any financial aid. This researcher also learned that once the ten students selected to begin the program showed up for classes for the first two weeks, those students who remained on the wait list had their applications subsequently cancelled. If those students wanted to begin the process again, they were required to re-apply for the DMS program without being required to pay the \$30 application fee again.

To determine the intentions for those students who had applications withdrawn, the researcher placed phone calls to randomly selected students. The researcher was able to contact and survey 25 students using the questionnaire listed in Appendix A. Students disclosed a variety of reasons for withdrawing their applications to the DMS program. Of those 25 students surveyed, 88% (n=22) stated that after they were informed that their application was withdrawn, were frustrated by the length of time they had to wait. Students stated that due to length of time before being eligible to receive financial aid and not being allowed to enroll in program classes,

were reasons for withdrawing their applications. Some were also reconsidering their field of choice. Three students surveyed indicated they had chosen to withdraw their applications due to a change of “life circumstances”. Of the students contacted it was reported that 82% of those students (n=18) would continue to research other careers that provided potential employment possibilities. One student responded, “After having my heart set on DMS, then to have that dream cancelled, I don’t want to go through the stress of re-applying to a program and having no guarantees of acceptance”. Overall, 28% of the students surveyed (n=7) indicated a potential likelihood of re-applying to the DMS program again in the future, however, those students would not rule out other programs.

Radiography

The Radiography program was considered to have an equally competitive of an application process as the DMS program. The Radiography program accepted up to 14 students each summer. As with the DMS program, a student may have been deemed qualified to enter the program, but were never allowed full acceptance into the program and never enrolled. Like the DMS program, after it was determined they satisfied the eligibility requirements, students who were fully qualified to begin the program were placed on a waitlist. Again, like the DMS program, the average waitlist for the qualified students was ten months. Similar to the DMS program, once the 14 accepted students began the program and attended classes for the first two weeks, those students placed on the waitlist had their applications cancelled. If those students truly intended to enroll in the Radiography program, they would have to re-submit applications and the required paperwork. While the statistics indicated high perseverance and retention rates for students accepted into program classes, the perseverance rate for those students on the

waitlists were not as favorable. Table 3 presents those findings specific to the Radiography program.

Table 3

Radiography: Percentage of Students: Percentage placed on Waitlists and Percentage of Applications Withdrawn before Enrollment

	Number of Students who met the program requirements	Number of Students who were placed on Radiography waitlist		Number of applications which were withdrawn	
2005	110	N=71	90%	N=70	99%
2006	106	N=86	81%	N=42	49%
2007	52	N=38	73%	N=15	39%
2008	46	N=32	70%	N=15	47%
2009	59	N=36	61%	N=33	92%
2010	65	N=43	66%	N=21	48%

During the course of this research, it was determined that, with the exception of the increase in 2009, there had been a consistent percentage of withdrawn applications. The highest percentage of withdrawn applications occurred in the year 2005, which experienced 99% withdrawal rate. During 2009, the withdrawal rate was 92%. However, during the years 2006, 2007, 2008 and 2010, withdrawn applications were somewhat consistent and were shown to be 49%, 39%, 47% and 48% respectively. It was noteworthy that while the number of students eligible to begin the program had been decreasing until 2008, this program has experienced two years of increased student eligibility during 2009 and 2010. The numbers of eligible students for the Radiography program were as follows: 110 students eligible during 2005, 106 students during 2006, 52 potential students during 2007, 46 potential students during 2008, 69 potential students during 2009 and 65 potential students during 2010.

As previously mentioned, there were dramatic increases in the number of withdrawn applications during 2005 and 2009. This researcher was able to contact 30 students from the

Radiography pool of applicants who showed no academic activity. Of those students surveyed, 93% of those students responded with frustration at being unable to immediately begin their education as planned (n=27). Of this group, 37% indicated to the researcher they were “actively exploring other programs” (n=10). Three of the contacted students indicated that they had accepted the delay and intended to use the time to arrange things in their lives, such as childcare. Those three potential students indicated that they planned to re-apply to the Radiography program in the future.

Physical Therapist Assistant

There were some major differences between the previously mentioned programs, both of which had “competitive” application processes and the Physical Therapist Assistant program. While maintaining high benchmark scores in reading, writing and math in order to ensure that students are academically prepared for the program, the Physical Therapist Assistant program did not require its applicants to write an essay detailing their interest in this field. This application process also did not require the completion of a mandatory job shadow prior to applying to the program. It did require the applicants complete a mandatory job shadow prior to entry into the program classes, however.

Like the two previous programs, the PTA program had a pool of potential students interested in becoming Physical Therapist Assistants. The numbers of eligible students were as follows: 110 potential students during 2005, 100 potential students during 2006, 74 potential students during 2007, 133 potential students during 2008, 93 potential students during 2009 and 2010 potential students during 2010. Table 4 presents these findings.

Table 4

Physical Therapist Assistant: Percentage of Students: Percentage placed on Waitlists and Percentage of Applications Withdrawn before Enrollment

	Number of Students who met the program requirements	Number of Students who were placed on Physical Therapist Assistant waitlist	Number of applications which were withdrawn		
2005	110	N=71	65%	N=42	59%
2006	100	N=61	61%	N=41	67%
2007	74	N=50	68%	N=17	34%
2008	133	N=73	55%	N=49	67%
2009	93	N=82	88%	N=29	35%
2010	91	N=89	98%	N=27	30%

The percentage of withdrawn applications from the PTA program were determined to be as follows: 59% withdrawn during 2005, 67% withdrawn during 2006, 34% withdrawn during 2007, 67% withdrawn during 2008, 35% withdrawn during 2009 and 30% withdrawn during 2010. Table 4 presents those findings.

It was determined during the course of this research that there was an average 13-month wait period before students began their program coursework. The researcher was able to contact 32 students whose academic records showed no activity since being placed on the waitlist. Sixty-six percent of those students contacted (n=21) expressed an interest in the PTA program and were hoping to eventually be enrolled in classes. A frequent comment was “I wish there were classes that I could take now, that would be financial aid eligible.” The remaining 33% (n=11) indicated that they were still interested in pursuing more education, however, were uncertain as to what career they wanted to pursue or even if they were considering NWTC. Of the 32 students contacted by this researcher, 90% of those students indicated that cost was not a factor when determining their next steps.

Respiratory Therapist

The Respiratory Therapist program, like the PTA program, did not have as competitive of an application process as the DMS and Radiography programs. Similar to previously mentioned programs, there were a consistent number of interested applicants every year. However, as with the PTA program, the number of students automatically placed on the program waitlist has been above 90% for the past 2 years. The numbers of potential students eligible to begin the Respiratory Therapist program upon successful completion of the application requirements were as follows: 94 potential students during 2005, 104 potential during 2006, 84 potential students during 2008, 79 potential students during 2008, 93 potential students during 2009 and 90 students during 2010. The researcher also noted that those students who willingly chose to withdraw their applications had been approximately 50% since 2007. The percentages of applications withdrawn during 2005 through 2010 were as follows: 71% during 2005, 60% during 2006, 52% during 2007, 52% during 2008, 51% during 2009 and 45% during 2010. Table 5 summarizes those findings.

Table 5

Respiratory Therapist: Percentage of Students: Percentage placed on Waitlists and Percentage of Applications Withdrawn before Enrollment

	Number of Students who met the program requirements	Number of Students who were placed on Respiratory Therapist waitlist		Number of applications which were withdrawn	
2005	94	N=58	62%	N=41	71%
2006	104	N=68	65%	N=41	60%
2007	84	N=69	82%	N=36	52%
2008	79	N=64	81%	N=33	52%
2009	93	N=92	99%	N=47	51%
2010	90	N=86	96%	N=39	45%

The researcher calculated an average of 16 months for wait time before students were officially accepted into the program, allowed to receive financial aid and begin classes.

During the course of this research project, the researcher was able to contact 28 students who had applied for the Respiratory Therapy program and whose records showed no activity. Of the contacted students, 71% indicated that they were re-evaluating their program choice (n=20).

Within the same group, 35% of the students (n=7) stated they had begun to actively explore Respiratory Therapy programs at other institutions, while 65% of those students intended to seek other programs at NWTC.

Chapter V: Discussion

Retention rates had long been a growing concern nationwide as well as at NWTC. However, little research has been done regarding a specific group of students who were placed on waitlists of six months or longer. Historically, there had been potential students, who despite successfully completing all application requirements, have not matriculated into their intended programs. One of the primary goals CTE established had been to educate and train a more skilled workforce for the surrounding community. If students were not able to start the required training to become a more skilled employee, technical colleges have not satisfied this important goal and thus have not served the local community and the taxpayers it serves.

NWTC had begun examining ways to analyze student retention as well as developed interventions in order to assist students during their educational programs. The goal was to increase the number of credentialed students who were able to join the workforce as a highly skilled workforce. However, administrators had rarely examined the prospective students who successfully completed applications, met the program requirements, but were not officially accepted into programs. In the past, large groups of potential students waited at least six months prior to starting their coursework.

The objective of this study was to provide suggestions as to areas in which NWTC could improve the matriculation rates within not only the four high demand healthcare programs, but also possibly, programs in general. The goals of this research were to:

- determine if the application process that is currently in place at NWTC played a role in deterring students from persisting until they could begin their intended healthcare program
- determine the average wait time for students before they were allowed to begin program classes

- provide suggestions for possible interventions that could be used for those students while on the waitlist for their intended healthcare program.

Summary

During the course of this research project, the researcher determined that the four analyzed programs all had higher graduation rates when compared to the overall graduation rate at NWTC. This would indicate positive work occurring within these four programs in order to retain those students once they are able to begin their program coursework.

After analyzing the data, it was determined that there were potential barriers for those students on the waitlist in any of the examined four high demand health programs. It was determined that students who applied for the DSM and Radiography programs had their applications automatically withdrawn after the program was filled with the requisite number of students. Often, those students were withdrawn from waitlists and forced to re-apply if they wished to pursue their first choice. The application process was lengthy and acceptance into the program was based on a committee decision. Often, the determining factor was a 1000 word essay submitted by the student with their application.

It was worth noting the high number of students who met the qualifications of the four analyzed programs, but never matriculated into their intended program. All four programs had consistently high numbers of interested students while also having high percentages of applications withdrawn either by NWTC or by the student.

This researcher found that the PTA and Respiratory Therapist programs did not have an automatic application withdrawal. These two programs had considerable wait time before students were allowed to begin taking classes. This researcher calculated the average wait time for the PTA program was equal to 13 months, while the wait time for the Respiratory Therapist program equaled 16 months.

Conclusions

Overall, these four programs displayed graduation rates that were higher than the overall NWTC college graduation rate of 39%. This supports the theory that this researcher held prior to undertaking this program examination: once students actually begin their program course work, the majority of those students were able to persist until they successfully completed their program. The steps that students must take before considered “eligible” for a program- attain high program benchmarks, job shadow experience as well as the essay- may force a student to consider their program choice before even applying. The overall application process associated with the four programs noted in this research may deter those students who are not serious about following through with the program rigors.

While the research indicated that students who entered one of the four high demand healthcare programs selected by this researcher, did show higher rates of completion when compared to overall graduation rates at NWTC, it was significant to note the number of applications that were withdrawn from each program during the selected time period. The researcher noted that applications for the Diagnostic Medical Sonography and the Radiography programs were automatically withdrawn after the entering cohort was selected. However, both of these programs still had high percentages of interested applicants not yet allowed entrance into their intended program. This indicated an opportunity for NWTC to work with this population, in order to find avenues in order for these students to obtain a credential in their intended field or explore other available options.

One thing that stood out to this researcher was the drop in number of qualified applications received for the Radiography program beginning in 2007. It was unclear to this

researcher if there was an outside factor causing this decrease as the qualifications of the successful candidate had remained the same.

It was interesting to note the consistency in potential applications for the Physical Therapist Assistant program. While there was a decrease between the years 2006 and 2007, and again between the years 2008 and 2009, there had been a large pool applicants who qualified for program entry. It was also noteworthy that the number of students placed on the program waitlist has been increasing since 2008. This indicated a potential need for additional sections as well possibly adding this program to the other NWTC campuses.

The Physical Therapist Assistant program was not a program that automatically cancelled applications after the fall semester start of a new cohort. This could explain the over 13 month average waitlist for students not immediately admitted to the program. However, this researcher also determined that there had been a consistent decrease in the number of applications withdrawn. This would indicate that there had been some progress in getting students fully matriculated into this specific program, by either adding additional seats or adding additional sections.

The Respiratory Therapist program was the other high demand program that did not automatically cancel applications. Like the Physical Therapist Assistant program, this may be a factor in the average of 16-month wait time for applicants. This too, could be indicative of a potential opportunity for more intrusive involvement with this population to determine how NWTC could improve services already established or do further research to implement additional alternatives for those students who are not allowed to begin their academic career.

Recommendations

While it is the opinion of this researcher that NWTC does work to make sure that the students who enter healthcare programs are prepared to begin the rigors associated with these programs, there are steps missing for those students waiting to matriculate into their intended program. Upon analyzing the number of applications as compared to the number of graduates, there appears to be a discrepancy in all four programs analyzed. It would appear that there is work that should be done at all stages of a student's educational path.

One recommendation that this researcher would make would be to set up a more consistent, less labor-intensive way of tracking individual students from application to graduation. At this time, there are several reports that must be run in order to retrieve the data. The data must be cross-referenced and progress charted. This is a timely process and because it is so manual, is open to inconsistencies or errors. In order to obtain more accurate data to allow for more in-depth tracking of this population, it is essential that this become an automated process.

Not only does the process need to become more automated, it needs to be capable of drilling down to the specific individual and the details of that individual's academic history. Currently, NWTC is developing and utilizing to some extent an EdWare Database system that may provide the information, however, that will be moving forward. However, currently, the information for those students who have previously applied, attended and possibly graduated from NWTC cannot be easily obtained.

There also needs to be more communication between those students who are placed on lengthy wait lists and NWTC staff. Overwhelmingly, the comments made by those students who were contacted by the researcher, were that the student was unaware of what to do next or if they

had any options for classes while they waited to be fully accepted. The possibility of a position being created that works exclusively with the retention and persistence of those students placed on lengthy waits lists could provide a beneficial service to this population and should be explored. There is often information and requirements that change related to specific programs, especially those in the healthcare field. The students on waitlists are often unaware of changes to program requirements until it is too late.

NWTC should also consider a more in-depth follow up with those students who had their applications cancelled, especially in the competitive application process programs, like DMS and Radiography. Too often, these students are unsure of how they could increase the likelihood of program acceptance. Programs like the DMS program or Radiography program could provide feedback to those students. The advisory committee could provide either written or in person sessions to discuss ways that they student could improve their chances for program acceptance.

NWTC may also want to consider ways in which they could collaborate with healthcare providers or four-year universities that offer these four programs within its district. These partnerships could provide needed clinical sites as well as increased availability with equipment for students. As noted on the Bay Area Workforce report, there is potential for job growth in all four of fields. However, there are limited clinical sites that are either willing or able to provide valuable real life experiences to students participating in a practicum experience. NWTC also has limited dollars in which they are able to provide with the most current equipment. Research must be done in order to determine the viability of those programs being offered at either the Sturgeon Bay or Marinette campus in order to increase the number of graduates in programs like DMS or Radiography. Those campuses have healthcare facilities in their communities in which students

could participate in practicum experiences. These students may later become graduates who can fill job vacancies in those surrounding communities.

It may also help if NWTC were able to establish a second start date for these four programs. As previously noted, these programs only begin one group per year. It may be beneficial if there were two groups allowed to begin classes at separate times during the year. This would limit the number of students working on machines during one semester, as they would be at different points during their academic progress. However, this would increase the number of qualified graduates who would be able to fill the increasing demand from within the communities served by NWTC.

This researcher believes that there is a potential opportunity to improve services for those students either who had their applications cancelled by NWTC or who chose to remain on waitlists. It would serve this population, as well as the community, to have those students work with the Career Center at NWTC to determine a potential field in which there are viable employment opportunities for graduates. The Career Center also hosts a variety of workshops as well as career assessment inventories. NWTC could extend those services to those students who had originally applied to one program only to not be accepted into their chosen program. This would assist those students in determining their next step.

If a student was adamant about staying with their original program, NWTC must explore options for students that include being allowed to receive the required funding and begin their academic progress as soon as possible. NWTC could accept students into their intended program and require that students first take their required general education courses, including the chemistry courses and anatomy and physiology classes that are required by these four high demand healthcare programs.

Finally, this researcher recommends that this data be collected and analyzed more regularly. Once a specific query or report is developed to drill down to be able to collect more individual specific information, trends could be used to develop a more streamlined process for those students who have been placed on a program waitlist.

As stated before, it is the opinion of this researcher that while NWTC does focus efforts that are proving successful for those students who have matriculated into their program, some attention should be paid to this large number of potential students who are not yet matriculated into a program. While the researcher acknowledges that at this time, health care programs are in high demand, there may be other programs that have significantly large pools of potential students that are not being allowed to complete a required credential as well. It is the opinion of this researcher that those recommendations provided in this paper relate for the four healthcare programs selected, could also be applied to other programs. Unless something is done, there will continue to be the outcry from employers that they are unable to find the skilled workforce required to move the local economies into a more productive and competitive force.

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Appendix A: Waitlist Student Questionnaire

This research has been approved by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46.

Good afternoon/evening. My name is Kelly Schumacher and I am a graduate student at University of Wisconsin – Stout. I am currently working on my thesis project, entitled “Examining wait list students in health care programs between the years 2005–2010” The purpose of my study is to analyze student records for those students placed on a healthcare program waitlist at Northeast Wisconsin Technical College (NWTC). It is my intention to determine the average length of time students were on the waitlist, whether or not they matriculated into their intended program or a different program or chose to discontinue their pursuit of higher education. Based on my findings, I will be making recommendations regarding the average length of wait time as well as possible options for students to do while on the wait list that could possibly allow students to make progress towards obtainment of a credential while waiting to be officially accepted into their desired program.

The reason for my call to you this afternoon/evening is because you have shown no class activity at Northeast Wisconsin Technical College. If it is ok with you, I would like to ask you a few questions. You have the right to discontinue this conversation at any time. It is my intent to use this research to assist NWTC in improving their procedures and options for students who are placed on the wait list of specific healthcare programs. By completing the following survey and openly and honestly answering my questions, you agree to participate in the project entitled, “Examining wait list students in health care programs between the years 2005–2010: Did those students matriculate into their intended programs.” I would also like you to know that there will be no identifiers linking you to any responses in paper. Your participation in this survey will remain confidential, with only this researcher knowing who participated.

Do you have a few minutes and would you be willing to answer 3-4 questions?

1. Why did you not take any classes at NWTC while on the wait list?
2. Do you intend to pursue your desired healthcare program at NWTC?
 - If not, do you intend to pursue your desired healthcare program at another post-secondary institution?
 - What factors went into that decision to attend another post-secondary institution:
 - a. Cost?
 - b. Less wait?
 - c. Different program requirements?

3. If classes were offered that would assist you in preparing for program entry, would you take those classes?

Thank you for taking this time to answer my questions. I appreciate your honesty. There will be no information included in my paper that will indicate your specific participation in this questionnaire/survey. Do you have any questions for me?
Again – thank you for your time and have a good afternoon/evening.