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# The Effects of Horticultural Therapy on Students Who Are At-Risk

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# **The Effects of Horticultural Therapy on Students Who Are At – Risk**

A Study Presented to the Graduate Faculty  
of the Department of  
STEM Education and Professional Studies  
Old Dominion University

In Partial Fulfillment  
of the Requirements for the Degree of  
Master of Science

By  
Jason M. Thomas  
December 2011

## SIGNATURE PAGE

This research paper was prepared by Jason M. Thomas under the direction of Dr. John M. Ritz in the SEPS 636, Problems in Occupational and Technical Studies. It was submitted to the graduate program director as partial fulfillment for the requirements for the Master of Science degree.

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

John M. Ritz, DTE

Advisor and Graduate Program Director

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Jason M. Thomas

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# CHAPTER I

## INTRODUCTION

Students who are at – risk in the United States are not a new issue affecting our country. Though our concern for students who are at – risk goes beyond the past decades, it was not until 1983 when the National Commission on Excellence in Education emphasized the link between education and economic well – being (Kauchak & Eggen, 2011). The major difference between our modern school system when compared to fifty or even 100 years ago is the growing awareness that all students, regardless if they are an “average” student or not, must be provided with an equitable and non – stigmatizing education (Montgomery & Rossi, 1994). For educators, it is part of their professional duty to assure that students will be able to meet the demands of our modern, contemporary society.

Today more than ever, educators are concerned with how to work with students who are at – risk, and rightfully so. Everyone in our country has the right to learn the skills to become an active and productive member of society, however there are many students who are at – risk in our school system. So who are these students who may be at – risk, and what traits typically define them?

Students who are at – risk can be found in any school or at any grade level, and while there is no way to accurately describe or pin point any one student who may be at – risk, they do tend to exhibit particular traits. Students who are at – risk come from backgrounds that typically include low socioeconomic status, divorced families, inner city, minority, and being a non – native English speaker; these students also tend to



demonstrate similar educational problems that include high drop out rates, low grades, low motivation, poor attendance, and low self – esteem (Kauchak & Eggen, 2011).

Although traditional school environments have provided some successes for students who are at – risk, alternative schools have also shown to provide support for them while teaching them technical skills they can utilize beyond school (Connor, Poyrazli, Ferrer – Wreder, & Grahame, 2004). One such school entity is Southeastern Cooperative Educational Program (SECEP) located in Hampton Roads, VA. SECEP provides a variety of programs geared toward both educating and providing skills to students who are at – risk within their community. The students and programs SECEP offer vary greatly; students who attend their schools have various conditions ranging from intellectual to emotional disabilities with programs ranging in scope from “live in” residential facilities for those not able to take care of oneself to general education while also teaching technical skills such as barbering, culinary arts, and agricultural education.

For the purposes of this research study, the researcher will label their agricultural education program as Horticultural Therapy due to students’ close work with plants. Horticultural Therapy (HT) is used in a variety of ways and for a variety of age groups. One idea that remains constant for HT is that those who partake in a program generally have a higher self – esteem than peers in similar situations. It is because of this reasoning that this research study was conducted, as students with a higher self – esteem generally tend to do better in school.

### **Statement of the Problem**

The purpose of this study was to determine the relationship between self – esteem and grade point average among at – risk high school students in Hampton Roads,

Virginia, who spent time in a Horticultural Therapy program to determine if the program should be expanded.

### **Research Goals**

In order to guide this study, the following research questions were developed:

RQ<sub>1</sub>: What was the level of self – esteem of students that participated in Horticultural Therapy in comparison to those who did not partake in a Career and Technical Education?

RQ<sub>2</sub>: What was the grade point average of students that participated in Horticultural Therapy in comparison to those who did not partake in a Career and Technical Education?

### **Background and Significance**

SECEP is an alternative regional public school system located in Hampton Roads, Virginia, that works with students who are at – risk. Their organization provides a structured program through which participating school systems can plan and operate programs for children with special needs (Southeastern Cooperative Educational Program [SECEP], 2011). The hope is that SECEP’s Re – Ed programs will provide students with a trade (e.g., barbering, culinary arts) while helping them complete their high school education in order for them to become productive members of our society. To meet this aim, educators must seek new, innovative ways to help students achieve their goals. Horticultural Therapy is just one way in which SECEP attempts to provide students with these needs.

Though much has been written about students who are at – risk and HT, there has yet to be a thorough analysis showing any relationship between students who are at – risk

while enrolled in a Horticultural Therapy program and their related levels of self – esteem and GPA. While researchers previously found links showing the positive benefits on self – esteem for those participating in a HT program, there is a need to look beyond to see if there are any links between the HT programs schools offer and their GPA. This will allow educators to see if the program should be given more emphasis and expanded further among students who are at – risk.

Conducting a research study on the effects of a Horticultural Therapy program may bring to light more information showing previously unknown benefits such as an increase in GPA or self – esteem. The principal objective of this study was to find if there are any benefits that are as yet unknown to determine if HT programs should become a larger focus and/or expanded at schools educating students who are at – risk. Perhaps students who are at – risk participating in a HT program do have higher self – esteem and/or a higher GPA than similar students in a non – Career and Technical Education programs, thus improving their chance to complete high school.

### **Limitations**

The limitations of this study were as follows:

- The study was conducted in Hampton Roads, VA, and specifically in Virginia Beach and Suffolk within a specific school program/system, therefore results may not pertain to other regions.
- The study was limited to a low number of twenty – three students, which may not provide adequate data to come to a concrete solution.
- The study was limited to the 2011 – 2012 School Calendar Year, while adding another academic calendar year may yield better results.

- The study utilized Rosenberg's Self – Esteem Scale to measure self – esteem, while adding other measures of self – esteem may yield more accurate results.
- Student achievement was only measured by way of GPA while adding measures of self – esteem may yield more accurate results.

### **Assumptions**

The researcher assumed the following conditions while conducting this research:

- Self – esteem is a quantifiable attribute of the self.
- Students who participated in this study are representative of the larger Hampton Roads, VA, population as well as other regions because of their varied backgrounds.
- Students with a higher self – esteem perform better in school (Adil, 1994).

### **Procedures**

Since the number of Horticultural Therapy programs for youth who are at – risk is fairly limited in Hampton Roads, the study was conducted at two separate high schools, both within SECEP. The first school, the Renaissance Academy in Virginia Beach, VA, is in the heart of Virginia Beach and serves students from urban and suburban environments. The second school, Deep Creek SECEP, located in Chesapeake, VA, is closer to the heart of a traditional farming community and serves students from rural and suburban environments. The two schools were chosen not only because they provided Horticultural Therapy programs, but also because the diversity of their student base.

To begin the study, an approximately equal number of students that were in the Horticultural Therapy program as well as a random selection of students who were not in the program were selected to participate. The students who were selected to take part in

the study then participated in a survey that measured their self – esteem based on Rosenberg’s Self – Esteem Scale (Rosenberg, 1989). Students’ cumulative grade point averages were also recorded to gauge their level of achievement in school. The outcomes of these studies were then analyzed and reported in the research study.

### **Definition of Terms**

In order to better understand the research conducted in this study, it is important to have an understanding of certain key words related to the study. The following list aims to help in understanding some of the key vocabulary in this study:

**At – risk student:** A student in danger of failing to complete their education with the skills necessary to survive in modern society (Kauchak & Eggen, 2011).

**GPA:** Grade Point Average

**Hampton Roads, VA:** Metropolitan Statistical Area in southeast Virginia comprising the counties of Gloucester, Isle of Wight, James City, Mathews, Surry, York, and Currituck County, NC, as well as the cities of Chesapeake, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg (Office of Management and Budget, 2009).

**Horticultural Therapy:** A garden based program specifically designed for subjects to care for and cultivate plants as part of a treatment program. Treatment varies from facility to facility, however for the purposes of this research constituted emotional, social, and/or intellectual needs depending on the condition of the at – risk students. The program consists of three main elements: a student treating issues, a goal the student is trying to achieve, and the responsibility of the student to care for the plants (Relf, 2005).

**HT:** Horticultural Therapy

**Normal Volunteers:** A healthy person – one with no scientifically contradictory abnormalities – who has been admitted as a patient of the Clinical Center in order to serve as a volunteer subject for approved research projects (Rosenberg, 1989).

**Re – Ed Program:** an educational program for at – risk students that stresses academic competence coupled with a focus on responsibility to others (SECEP, 2011).

**Rosenberg’s Self Esteem Scale:** One of the most widely used measures of self – esteem in the social sciences.

**SECEP:** Southeastern Cooperative Educational Program; an organization that provides formal structure through which participating school systems can plan and operate programs for children with special needs that was founded in 1978 (SECEP, 2011).

**Self – esteem:** Pride in oneself; self – respect (Costello, 1997).

**Self – Perception Profile for Adolescents:** “A 45 – item questionnaire that provides scores on nine factor analytically derived subscales” (Hagborg, 1993, p. 133).

**Socioeconomic status:** The combination of family income, parents’ occupations, and level of parental education (Kauchak & Eggen, 2011).

## **Overview of Chapters**

Chapter I comprises an introduction to the research study. Included within this chapter was a background on the SECEP schools chosen for the study as well as the subjects participating in the study. Also discussed were the outlying goals for the research that provided the framework for the study. Lastly, Chapter I outlined the basic procedures used in order to collect the data.

Chapter II, Review of Literature, discusses a selection of previous studies conducted on the topics of Horticultural Therapy as well as students who are at – risk.

Chapter III, Methods and Procedures, discusses the instruments used to measure self-esteem, grade point average, and how data were interpreted. Chapter IV, Findings, discusses the results of the study. Finally, Chapter V, Summary, Conclusions, and Recommendations, concludes the study and discusses how data were analyzed and makes recommendations as to how other programs working with students who are at – risk should support and emphasize their programs.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

This review of literature was written to discuss several factors students who are at – risk face and how schools can provide support to improve students’ self-esteem in order to improve student achievement, including improving their GPA. Schools, teachers, and administrators have all attempted various ways to support students who are at – risk in the past; some programs showed promise while others did not. Educators are in a position of particular importance in that they can make a significant impact in these students’ lives. It is up to them to persistently work in assisting these students by staying current on research and integrating and implementing proven and promising techniques into their programs; this will hopefully lead to the betterment of these youth. Horticultural Therapy is one such program that has shown promise in creating positive effects on students who are at – risk.

During the course of this research, several important factors were found related to the study. In order to better understand students who are at – risk, the researcher discussed typical characteristics these students embody. Also discussed are key factors that help define students who are at – risk, such as GPA and self – esteem levels. Current and past programs used to assist in the education of youth who are at – risk also play an important role, not only in how these students are educated and trained to be productive members of society, but in how these programs will evolve in the future. Again, HT is one such program, and a discussion of some specifics to the program and its subsequent effects on students are important to know. SECEP is an integral educational institution located in Hampton Roads providing HT programs for students who are at – risk in the



region. SECEP is comprised of several schools that cater to the development of a wide array of youth, including at – risk students. Along with other individual school systems in the area, SECEP provides a much needed service to our youth, local society, and culture. SECEP is a local innovator in regards to how they prepare students in becoming active members of our society.

### **Characteristics of Students Who Are At – Risk**

At – risk students are those in danger of failing to complete their education with skills necessary to effectively function in modern society (Kauchak & Eggen, 2011). This is a growing problem for today’s youth as society must carefully and thoughtfully foster and nurture all students so they are able to become productive members of society. Students represent a resource and focal point for the application of society’s many other resources to ensure their healthy growth and development (Pentz & Straus, 1998). Through considerable research, many of the background and educational factors distinguishing students who are at – risk are now identified. The majority of this research has been conducted since 1983 (Kauchak & Eggen, 2011) when the report written by the National Commission on Excellence in Education deemed the United States a “nation at risk” (National Commission on Excellence in Education, 1983).

Because research now indicates students who are at – risk tend to come from particular backgrounds and display many of the same educational issues, one can focus on some of these major issues. One of the most pernicious issues facing at – risk students is the dropout problem. The major educational problems that correlate to high dropout rates among students who are at – risk are low grades and achievement, low motivation, low self – esteem, and a lack of interest in being in school (Kauchak & Eggen, 2011); any

and all of these issues could lead a student to dropout of school or at least seriously consider it. Because GPA and self – esteem were a major focus of this research, a bit more emphasis will be placed on these concerns.

### **Student Achievement of Students Who are At – Risk**

Low GPA is one factor that is common for students who are at – risk, but what are the factors that lead these students to consistently display a low GPA in school? Obviously, there are many factors at play. Research identifies a common problem among students who are at – risk is simply low motivation. Many of these youth are not inspired to work hard because their classes are not interesting and there was a lack of challenge (Kauchak & Eggen, 2011). If students are unmotivated to participate in school, how can they be expected to achieve at a high level? Students who begin to fail one or more subjects then run the risk of considering school as a place of dread and begin to dislike attending (Lampley & Johnson, 2010). Students who are considering dropping out of school need to believe they belong in school, and that someone cares about their successes and about them as people (Barton, 2006). Research also suggests that students who are at – risk are routinely provided with less educational activities outside of school (such as visits to museums and libraries), less supporting materials at home (like computers and newspapers), and less likely to participate in out – of – school experiences (such as music or dance lessons and athletic camps) (Kauchak & Eggen, 2011). These factors, among others, may lead students who are at – risk to achieve low GPA’s, which in turn may lead to lower self – esteem.

## **Self - Esteem of Students Who Are At – Risk**

So why is it that students who are at – risk commonly exhibit low self – esteem and what are some possible causes of low – self esteem? Several factors impact self – esteem including academic ability, social acceptance, body image, school environment, socioeconomic status ethnicity, and age (Phinney, Cantu, & Kurtz, 1997). Although these factors certainly have an effect on overall self – esteem, research now suggests a major cause of low self – esteem is at which point or stage of adolescence a youth is in also plays a large role.

In early adolescence, when students are undergoing many psychological and physiological changes, self – esteem generally tends to be at its lowest point (Civitci, 2010). This is an issue that may be compounded in students who are at – risk. Generally, as youth move through from the early part of adolescence and into the later years, research shows a gradual increase in self – esteem (Hirsch & Rapkin, 1987). Students who are at – risk with low self – esteem may have a poor view of their overall quality of life, and poor viewpoints towards matters such as friends, family, and their overall environment. Through research and action, many hope to help students who are at – risk by lowering levels of anxiety and depression, and raising levels of self – esteem and hope, thus creating more positive viewpoints towards school, friends, and family (Civitci, 2010). If students who are at – risk are able to raise their self – esteem, the risk of alienation from teachers, classmates, and school administrators becomes much lower (Lampley & Johnson, 2010). However, how is one to determine the self – esteem level of an at – risk youth? One measure to do this is the Rosenberg Self – Esteem Scale.

## **Resulting Dropout Issue for Students Who are At – Risk**

Low GPA and low self – esteem are common issues among students who are at – risk, which may in turn exacerbate another issue, students dropping out of school.

Though experts disagree about the number of students who dropout of school, what they do agree on is that the dropout rate varies considerably among ethnicities as well as along socioeconomic status lines (Kauchak & Eggen, 2011). Major contributors leading to the dropout issue stem from a student’s low GPA and low self – esteem. A major key to keeping students who are at – risk in school may be in finding ways to increase their GPA while boosting self – esteem.

### **Rosenberg’s Self – Esteem Scale**

The Rosenberg Self – Esteem Scale is a globally used method of measuring self – esteem (Hagborg, 1993). Initially developed in the 1960’s by Morris Rosenberg, it was first tested in New York State with more than 5,000 randomly sampled high school juniors and seniors participating (Rosenberg, 1989). The researcher used this ten – item, self – reporting measure of self – esteem because of its general acceptance among the research community, as well as evidence of its validity and reliability. The Rosenberg Self – Esteem Scale uses a four point Likert-type scale with answers ranging from “Strongly Disagree” (0) to “Strongly Agree” (3) (Rosenberg, 1989).

Validity and support of the Rosenberg Self – Esteem Scale is strong and supported by many studies since its development. Chiu (1998) has recommended the Rosenberg Self – Esteem Scale as a “brief and thorough measure... with considerable evidence of its reliability and validity” (p. 299). Hagborg (1993) also notes the scale was

included in over 60 published studies within a five year span, further attesting that the scale is a valid and reliable measure of self – esteem.

One study designed to test the validity of the Rosenberg Self – Esteem Scale used a set of normal volunteers where they were asked to fill out various questionnaires regarding self – esteem. Nurses concurrently filled out their own questionnaires regarding the patients and their general demeanor and mood. Neither the patients knew about the nurses’ questionnaire, nor did the nurses know about the patients’ questionnaire. The study found that where patients scored low on the Rosenberg Self – Esteem Scale, nurses had similar opinions that these patients appeared depressed (Rosenberg, 1989).

A second study conducted by Hagborg (1993) also looked at the validity of Rosenberg’s Self – Esteem Scale by comparing it with a separate Self – Perception Profile for Adolescents test. Subjects of this study were drawn from grades 8 – 12, however it did exclude students with any type of educational handicap. Hagborg (1993) concluded that Rosenberg’s Self – Esteem Scale showed a strong relationship as an indicator of an adolescent’s global self – esteem.

### **Successful Programs for Students Who Are At –Risk**

Several programs developed over the years are now used in assisting students who are at – risk to become productive members of society. Many of these programs have shown significant promise and are now being utilized in various places across the country and beyond. These programs are typically aimed at aiding students who are at – risk academically, socially, and emotionally among other benefits.

Student mentoring is one such program proven to be effective in assisting students who are at – risk to better understand what it takes to survive in school and in our modern world. The LISTEN mentoring program, or Linking Individual Students To Educational Needs, was devised in 2003 and modeled after other successful programs. The idea was to partner students who are at – risk with an adult to provide additional support outside the classroom setting. The primary goal was to establish meaningful relationships between caring adults and students who are at – risk. The relationships placed an emphasis on study habits, interpersonal relationships, problem solving techniques, and communication skills. By encouraging positive behaviors, mentors provided support and guidance to encourage students to succeed (Lampley & Johnson, 2010). Lampley and Johnson’s (2010) research showed a significant positive impact once the mentoring intervention completed an academic year. Nearly all of the students raised their GPA’s, had less discipline referrals, and showed better school attendance (the three criteria analyzed for their study); additionally, 91% of the subjects improved in all three areas (Lampley & Johnson, 2010).

Another program proven to be successful with students who are at – risk is an Adventure Based Therapy, which is named “Take – A – Hike.” This program assists youth with many of the typical issues facing students who are at – risk like truancy, dropping out of school, relationship issues, lack of interest and motivation, drug and alcohol abuse, and poor academic performance (Klein, 2008). Klein (2008) recognizes that the program consists of four main components, which include academics, a life skills course, therapy, and an outdoor adventure based learning portion. While participating in the program, the students take part in therapy sessions both in a conventional office

setting as well as in an outdoor wilderness setting during multi – day camping trips. Prior to going on the camping trips, which is the key component to this program, students are placed into teams of three a week before their trip. This allows them time to plan for things like food and supplies they must take with them while camping. While on the trip, the leader and counselor, typically finds him or herself providing therapy sessions to alleviate any issues or stresses students may encounter with their group members or other issues within themselves. The program has proven to alleviate many of the issues students had when entering into the program (Klein, 2008).

A third program that has consistently proven to help people of all backgrounds with a variety of issues is Horticultural Therapy. What better means to provide a way to channel and burn off energy than by planning, planting, or working in a garden that can teach children appreciation and delayed gratification (Pentz & Straus, 1998)? Research shows that HT provides several benefits. For starters, behavior tends to improve with students participating and there are fewer disruptive students. Just being in the presence of plants aids students with Attention Deficit Disorder and decreases their symptoms (Howard, 2007). Additionally, HT has been shown to improve self – esteem and confidence while lowering stress. It also has cognitive benefits in that participants are able to sharpen observation, problem solving, and decision making skills, while adding to participants’ level of curiosity and experimentation (Adil, 1994).

### **Horticultural Therapy**

“To stroll through a garden is to soothe the troubled soul, lose the accumulated stress of daily life, to exercise the body, stimulate the mind” (Bruce, 2006, p. 6). This sentiment explains why many have looked to HT over the years for a variety of human

health issues. In fact, Horticultural Therapy has been used throughout most, if not all of recorded history. HT was used in ancient Egypt for depressed and mentally ill members of the court who were routinely taken on strolls through the royal gardens (Bruce, 2006). Later, in medieval Spain, it became a common practice for poor hospital patients to work in the gardens to pay their bills. These patients were even described as recovering faster than wealthier patients who did not spend time in the gardens (Bruce, 2006). In a more modern setting, physically and mentally wounded soldiers in World War I were frequently helped with “garden therapy” (Bruce, 2006). It was not until World War II, however when HT was truly viewed as an acceptable treatment vehicle (Davis, 2003).

Horticultural Therapy is clearly a program utilized for years to provide positive benefits for an array of human issues. This is likely because the garden can truly be a restorative environment. HT programs provide a safe and non – judgmental place with a connection (or re – connection) with life and a reason for tomorrow (Bruce, 2006). Until recently, however practitioners and people practicing HT wrote and lectured about these benefits without providing much in the way of research based documentation of HT’s efficacy (Relf, 2005). Relf (2005) mentions that the positive effects of HT were mistakenly believed to be so great, that further documentation was not required; this is simply untrue. It was not until recently that much research was conducted on Horticultural Therapy and begins to corroborate the notion that HT does, in fact, have several positive outcomes on a variety of people and issues. Today, through research, one now knows that HT provides a variety of benefits including physical, emotional and psychological, social, and intellectual benefits (Adil, 1994).



## **Functionalities of Horticultural Therapy Programs**

Horticultural Therapy is a treatment program used to promote mental and physical well – being in people (Howard, 2007). The ranges of therapeutic effects to those participating in an HT program include emotional, physical, intellectual, and social benefits (Relf, 2005). There is more to HT than just these benefits, however.

Horticultural Therapy also teaches vocational skills that can later be applied to work settings (Howard, 2007). Students, therefore, not only receive the positive effects of mental and physical well – being, but also learn a trade, which they can take with them into the world beyond school and earn a living.

In the realm of public schools, programs generally focus on vocational and pre – occupational components of Horticultural Therapy. In this type of HT program, teachers typically work with students in a horticultural environment that is used to teach basic job skills as well as industry specific skills (Haller, 1998). Often these school programs are focused on students who are at – risk, providing them with an avenue into the horticultural job market beyond school (Haller, 1998). Haller (1998) maintains that working with indoor plants, flowers, and even landscaping provides tangible results that can easily be seen by the participants and is valued by society for their beauty and utility. These efforts can easily be seen in urban neighborhoods where well landscaped areas show a reduction in crime and littering, and retail areas tend to perform better as residents linger longer in well planted settings (Howard, 2007).

The actual structure of a Horticultural Therapy program is generally fairly simple, and not unlike other educational programs or classes. As Pentz and Straus (1998) describe, HT is essentially a four – step process. The first (1) step is to identify a

problem to address; in this case it is students who are at – risk. The second (2) step one must identify what the goal of the HT is, which is followed by the third (3) step where the objective(s) are guided by certain procedures that are typically determined by the teacher and/or curriculum. The fourth (4) and final step is where procedures are set in place to assist students in achieving their goals by working through objectives or activities.

It is important to take into account several considerations when planning activities with any group. Considerations such as keeping in mind how the activity acts as a tool for treatment, the specific type of program, the overall treatment goals, and realizing participants have varied backgrounds and skills all need to be accounted for when planning an HT program. One must also keep in mind that a situational assessment may yield information that may drive future program content and that program continuity helps to connect sessions for enhanced outcomes (Catlin, 2006).

### **Recent Horticultural Therapy Case Studies**

One research study was performed on an inpatient cardiopulmonary rehabilitation program to determine if Horticultural Therapy created any effect on the mood of its subjects. A primary focus of this study was to determine if HT created any stress reducing benefits (Wichrowski, Whiteson, Haas, Mola, & Rey, 2005). The study performed by Wichrowski et al. (2005) found that even after a single HT program treatment, patients showed a significant reduction in tension, depression, anger, fatigue, as well as an increase in vigor/energy. The positive effects the Horticultural Therapy program produced on cardiopulmonary patients certainly shows promise with respect to the greater population, including students who are at – risk.

Another study looked at a twenty – five year old female diagnosed with a mild form of mental retardation as well as emotional disabilities living in a group home setting. This young lady began exhibiting inappropriate behavior towards her housemates, including hitting, breaking belongings, and yelling at others (Catlin, 1998). In order to allow this young lady to stay in the home, the staff decided she needed to improve her behavior and interactions with others. After two months in the program her behavior was not 100 percent improved, but the staff noted a significant change and agreed she could remain living in the home provided she continued to work on her behavior (Catlin, 1998). This young lady’s behavior may not be unlike other students who are at – risk participating in Horticultural Therapy programs like the one at SECEP. This case shows that HT may not be a cure – all, but it can provide positive benefits in behavior, which may in turn lead to higher self – esteem and higher concentration on their school work (Baker, 2009; Conner et al., 2004; Civitci, 2010; Howard, 2007).

## **SECEP**

The Southeastern Cooperative Educational Programs (SECEP) is located in Hampton Roads and serves as a regional public school for the area. The school was organized in 1978 by the school systems of Chesapeake, Franklin, Isle of Wight, Norfolk, Portsmouth, Southampton, Suffolk, and Virginia Beach along with assistance from the Virginia Department of Education. SECEP provides a structure for participating school systems to plan and operate programs for children with special needs and serves over 1500 students divided among five separate programs (SECEP, 2011).

The focal point of this study was on SECEP’s “Re – Ed Program,” or the “Re – Education of Children Program.” HT is encompassed within the Re – Ed Program and is

based on Nicholas Hobbs' twelve principles of re – education developed in the 1960's (SECEP, 2011). The Re – Ed Program's core belief is that students who are at – risk can be taught to manage their behavior while learning new solutions for living in the family, school, and community environments. In this program, core academic instruction is supplemented with programs that focus on literacy, social skills, and the group process while standard academic instruction is meant to be aligned with the real – world (SECEP, 2011). It appears that in this program, work experiences are regarded as the centerpiece of the curriculum. Students who are at – risk that participate in the program range in age from five to twenty – one, and many are identified with some form of emotional disability (SECEP, 2011). It is because of the demographics covered by the program as well as the range in area across Hampton Roads that the author chose to perform the study with SECEP.

### **Summary**

Students who are at – risk are a major concern today. Though the characteristics and issues related to students who are at – risk range far and wide, research shows many of these students demonstrate similar issues. Low self – esteem and a low GPA are but a few of the issues and may lead students in deciding to dropout of school. In recent years a large amount of research has been conducted on this group of youth to help in assisting them to become active, upstanding members of our society. Because of the research on students who are at – risk, several programs have been developed over the years showing promise in aiding these students. Though the researcher briefly discussed some of these programs, the catalog of successful programs truly is an exhaustive list. Horticultural Therapy is one such program that has shown much promise in recent years in assisting

students who are at – risks acclimate to school and society in general. In Hampton Roads, SECEP has established itself as a highly effective regional public alternative school. Horticultural Therapy is one of many programs they offer that has demonstrated itself as an effective way to assist students who are at – risk within their community. Following will be a review of the methods and procedures the researcher used in conducting the research study.

## **CHAPTER III**

### **METHODS AND PROCEDURES**

The purpose of this chapter was to explain the methods and procedures the researcher used in conducting the study. The research was performed to determine if there were any benefits to at-risk students' level of self-esteem and/or GPA by participating in a Horticultural Therapy program. Students that participated in the research attended school through SECEP's Re – Ed program in Hampton Roads, Virginia. This chapter also explained the instruments used to conduct the research and how the data were collected. Furthermore, a look into how the statistics were later analyzed is discussed.

#### **Population**

The population for this study was students participating in the Re – Ed Program at the Renaissance Academy in Virginia Beach, Virginia, and Deep Creek SECEP located in Chesapeake, Virginia; both schools have active Horticultural Therapy programs. Students participating in the HT program were studied along with other students in SECEP's Re – Ed program who were not participating in the HT program as a control group.

Students selected to participate in the study were in grade levels 9 – 12 and lived in urban, suburban, or rural areas within Hampton Roads. The students who are at-risk also participated in SECEP's Re – Ed program for a period of at least two 9 – week grading periods prior to the study. Participating students were deemed at-risk for a variety of issues that ranged from physical and psychological disabilities to coming from a low socioeconomic status background. There were a total of six (6) students who

participated in the study that were a part of the HT program, while a total of seventeen (17) students participated that were not part of the HT program.

### **Instruments Used**

Two instruments were used in determining the effectiveness of SECEP's Horticultural Therapy program. The first instrument was a survey used to determine the participating students' level of self – esteem through the use of the Rosenberg Self – Esteem Scale. Morris Rosenberg initially developed the survey in the 1960's; today his survey remains a reliable, valid, and popular means to measure global self – esteem among adolescents (Hagborg, 1993). The ten – question Rosenberg Self – Esteem Scale (see Appendix A) uses a four point Likert scale in determining an individual's level of self – esteem. Higher scores indicate a higher self – esteem.

The students' GPA was the second element utilized in the research study. Only the student's GPA while participating in the Re – Ed program was considered for this research. Participating students' GPA across all subjects was received from their school records with prior approval. Upon reviewing the students' GPA, the researcher was able to determine if any relationship existed between participation in the HT program and a higher GPA.

### **Methods of Data Collection**

All Re – Ed Program students at the Renaissance Academy and Deep Creek SECEP received a parental consent form to participate in the study. The form indicated that the study was being conducted to determine relationships between the Horticultural Therapy program and students' self – esteem and GPA. The form also noted that self – esteem was to be measured by a ten – question survey to be given while at school.

Scores from Rosenberg's Self – Esteem Scale were collected from all participating Re – Ed students from their Home Room teacher at their respective school. Student's were asked to take the survey individually and were requested not to answer the questions as they think they should be answered, but in an open and honest fashion. Scores were then tabulated from the Rosenberg Self – Esteem Scale with a possible a range in scores from 0 – 30. This test was conducted one time to compare students within the HT program to those not in a Career and Technical Education program.

Students' GPA's were then reviewed, recorded, and placed in a table along with their scores from Rosenberg's Self – Esteem Scale. The researcher reviewed each student's GPA across all subjects during their participation in SECEP's Re – Ed program leading up to the study.

### **Statistical Analysis**

Upon collection of the data, the participating students were placed into two groups. All students were deemed at – risk as well as participants of SECEP's Re – Ed Program, however those who were enrolled in the HT program were placed into one group, while the students who were not enrolled in a Career and Technical Education program were placed into a separate control group. Each student's self – esteem and GPA scores were then placed into a table to determine if any patterns existed between students who did participate in the HT program to those who did not participate a Career and Technical Education program. Because the goal of the study was to determine if there was a significant difference between the two groups and data collected were interval data, two *t*-tests were used to determine the answers to Research Questions 1 and 2.



The first *t*-test was used to determine if there was, in fact, a link between participation in SECEP's Horticultural Therapy program and the at – risk students' level of self – esteem. The second *t*-test was used to determine if any connection existed between the students' overall GPA (while in the Re – Ed program) and their participation in the HT program. After analyzing the data, the researcher determined whether there was a statistical correlation between the HT program and an increase in self – esteem and/or GPA.

### **Summary**

The purpose of this study was to determine if participation in a Horticultural Therapy program has an impact on at – risk students' level of self – esteem and GPA. In order to determine if the program had an effect, students across SECEP's Re – Ed program were evaluated on the basis of their results of a self – esteem survey as well as their GPA. Data regarding self – esteem was collected directly from the students, while their cumulative GPA information was collected from school records. Several tests were then conducted to determine if any relationship existed at all, and if so, to what extent. If a strong relationship did exist, perhaps there will be a way to further integrate the Horticultural Therapy program across the Re – Ed curriculum to incorporate more students. A review of the researcher's finding will follow in Chapter IV.

## **CHAPTER IV**

### **FINDINGS**

The purpose of this study was to determine if SECEP's Horticultural Therapy program was successful for students who are at – risk. In order to determine the success of the program, the researcher studied students participating in SECEP's Re – Ed Program; results of students participating in the HT program were compared to students who were non – Career and Technical Education participants. The two factors used in this study to determine the success of the program included students' scores from the Rosenberg Self – Esteem Scale as well as their GPA's. Initially, the students' participation rate and responses will be discussed followed by the results of the survey as well as their GPA scores in a review of the findings. The research was guided by the following questions: RQ<sub>1</sub>, What was the self – esteem level of students that participated in Horticultural Therapy in comparison to those who did not? And RQ<sub>2</sub>, What was the grade point average of students that participated in Horticultural Therapy in comparison to those who did not?

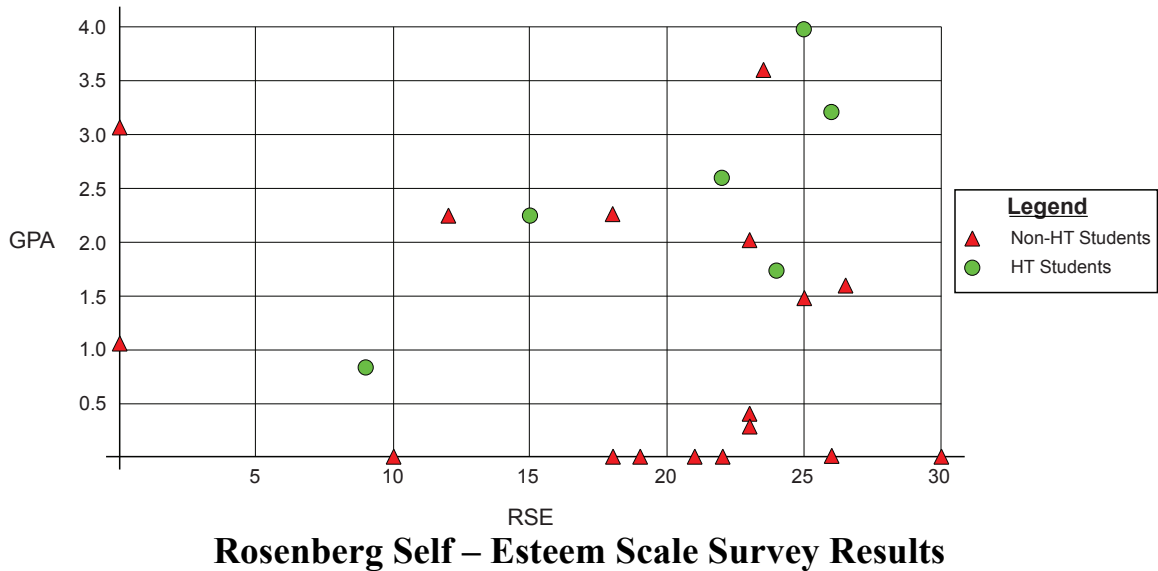
#### **Participation Rate and Response**

In order for students to participate in the study, the researcher determined a requirement that they must have two quarters of participation in SECEP's Re – Ed Program either as a participant of the HT program or non – Career and Technical Education program. In this case, there were a total of sixty – three qualified students who were not participating in a Career and Technical Education program, while there were a total of fifteen qualified students who were participating in the HT program. Of these students, seventeen of the non – Career and Technical Education students responded to

participate in the study, while six of the HT students granted the researcher permission to participate in the study.

### Report of Data

As seen in Figure 1, participating students’ survey results and their corresponding GPA’s were first placed into a scatter plot to begin comprehending the data. In an effort to take a first look at the data, the scatter plot was assembled to determine any initial findings. What the graph shows is that while many of the non – Career and Technical Education students have a GPA at or below 2.0 (including several with a 0.0 GPA), it did not always seem to have a determination on the score of their Rosenberg Self – Esteem Scale results. On the other hand, the scatter plot shows the majority of the HT students’ GPA at or above 2.0, while their scores on the Rosenberg Self – Esteem Survey tended to be at or above 15.



The results of the Rosenberg Self – Esteem Scale showed there was a minimal difference in overall mean and median in favor of students participating in SECEP’s Re – Ed Program. Figure 2 shows the mean score on the Rosenberg Self – Esteem Scale for

students participating in the HT program averaged 20.17 with a median score of 23, while the mean score for those not participating in a Career and Technical Education program averaged 18.82 with a median score of 22. A *t*-test calculation showed there was no statistically significant difference among the two sample means with the given result of  $t(21) = 0.34, p < .05 = 1.721$ .

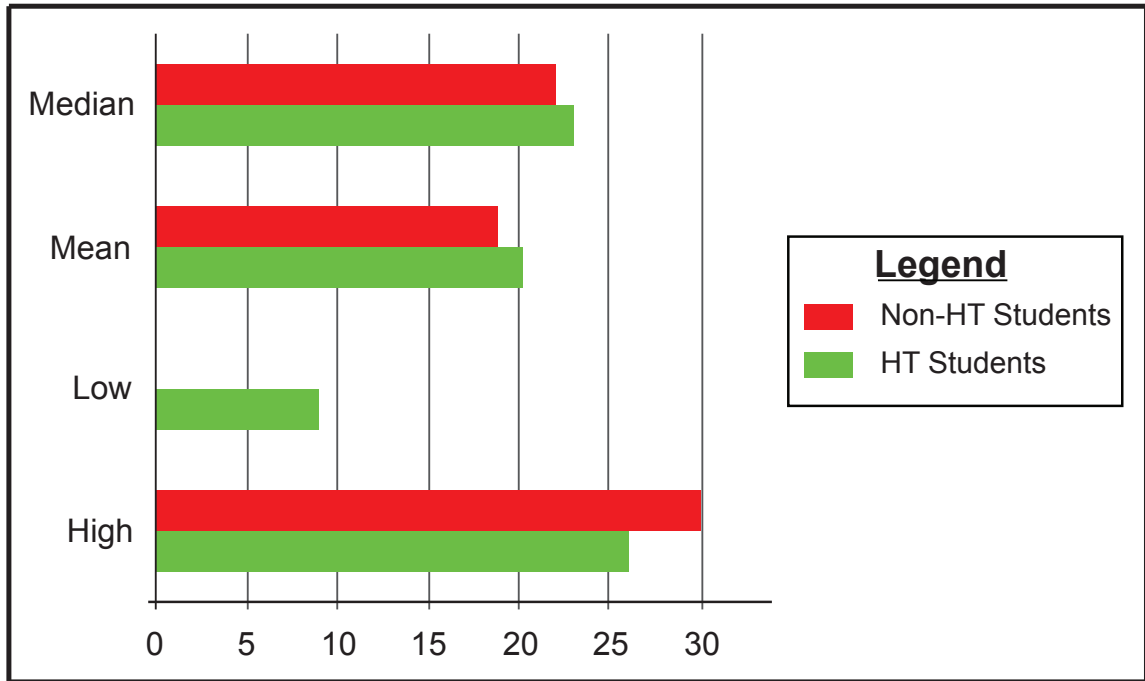


Figure 2. Rosenberg Self – Esteem Survey results.

It stands to be noted, while the *t*-test determined there was no significant difference between the two sample means, some important information can still be gleaned from the data. For instance, the group of students who were not participating in a Career and Technical Education program produced two results of zero (0) on the Rosenberg Self – Esteem Scale, while students participating in the HT program produced no results of zero. Additionally, 67% of the Horticultural Therapy students produced scoring results of 22 or higher, while less than 53% of the non – HT produced these same scores. The non – Career and Technical Education students did produce one perfect

score (30) on the Rosenberg Self – Esteem Scale, while the HT students produced a high score of 26. With respect to the first research question, the *t*-test determined that there was no significant difference between the two sample means, therefore the answer to this research question with respect to the given data was determined that the Horticultural Therapy program did not produce significant benefits to students’ who are at –risk level of self – esteem.

### Comparison of GPA Results

The results of the comparison of GPA showed that there was a significant difference in the overall mean and median in favor of students participating in SECEP’s Horticultural Therapy program. As can be noted in Figure 3, the mean GPA for students participating in the HT program was 2.42 with a median GPA of 2.41; students not participating in a Career and Technical Education program displayed a mean GPA of 1.06 with a median score of 0.41. After completing a *t*-test with the given data, it was

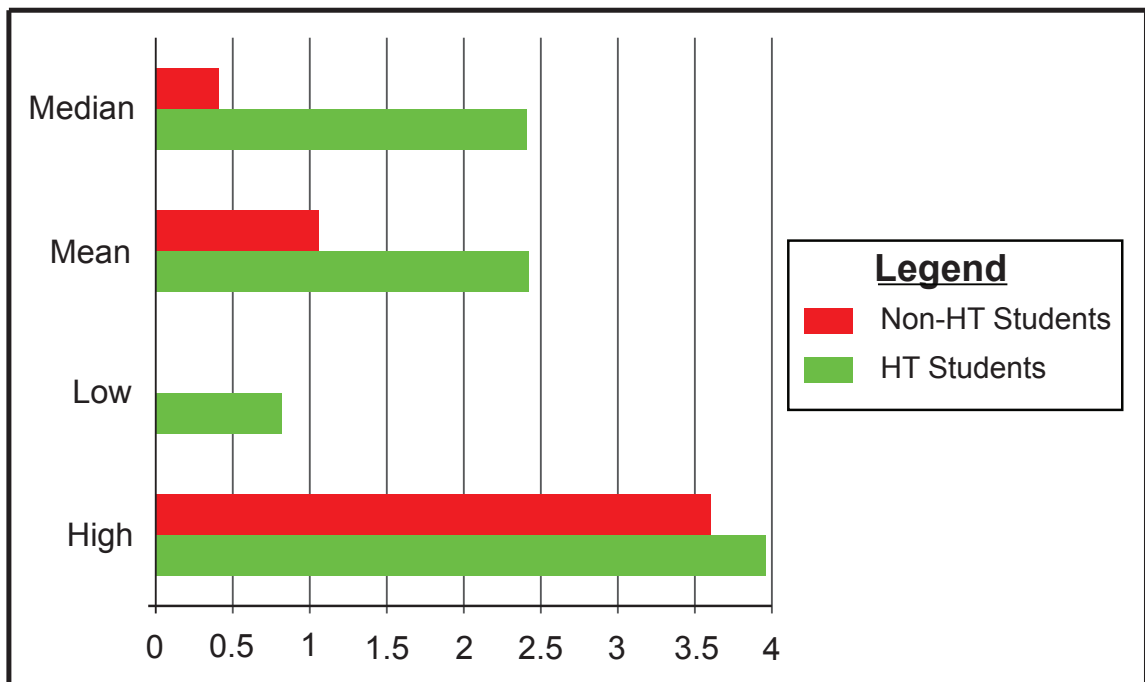


Figure 3. Students’ GPA participating in the survey.

verified that there was a statistically significant difference between the two sample means with the given result of  $t(21) = 2.39, p > .05 = 1.721$ .

With the *t*-test having determined there was a significant difference in the two sample means, portions of the data stood out to the researcher. For instance, seven of the seventeen non – HT participants (or about 41%) recorded a GPA of zero (0) with an additional two other students below the passing GPA level of 1.0 (showing nearly 53% of students recorded a failing GPA). On the contrary, five of the six students (or about 83%) participating in the HT program recorded a passing level GPA, with four of them (or about 67%) posting better than a C average (or 2.0). With the given data in mind and in regard to the second research question, the *t*-test determined that there was a significant difference in the two sample means of student GPA in SECEP’s Re – Ed Program. This research question can be answered that the HT program did in fact produce positive results in students’ who are at – risk GPA at the .05 level.

### **Summary**

This chapter provided the answers to Research Questions 1 and 2 by way of analyzing the given data from participating students in two of SECEP’s regional high schools. The data were collected from students who, along with their parents, agreed to participate in the Rosenberg Self – Esteem Scale and also allowed the researcher to view their GPA. After analyzing the data through the use of two separate *t*-tests, it was determined that while there was no significant benefits to self – esteem level for students who are at – risk, there was a significant difference in their overall GPA while participating in SECEP’s Re – Ed Program. While both the mean and median numbers

for students' level of self – esteem was higher for those students participating in the HT program, the *t*-test determined that there was no significant correlation.

In the following chapter, the researcher will use the data presented in this chapter in order to draw conclusions about the efficacy of the Horticultural Therapy program provided by SECEP. Conclusions will be drawn from the data, and recommendations for any future studies will also be presented.

## **CHAPTER V**

### **SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS**

Students who are at – risk pose a special challenge to educators everywhere. Because of the unique challenges these students pose to educators, it is imperative for the education community to find effective ways to educate these children and ready them for the world that awaits them upon graduation. Horticultural Therapy is one such program that has been used for centuries since many believe it can help form a solid foundation for students who are at – risk.

Analyzed in this chapter is a summary of research questions. Additionally, an evaluation of the results for the study is used to draw conclusions from the data. Finally, the researcher offered recommendations for any future, related studies.

#### **Summary**

The purpose of this study was to determine the relationship between self – esteem and GPA among high school students who are at – risk in Hampton Roads, Virginia, who spent time in a Horticultural Therapy program with the ultimate goal of determining if the program should be expanded. In order to do this, two research questions were posed to guide this study. The first research question, RQ<sub>1</sub>, asked what was the level of self – esteem of students that participated in Horticultural Therapy in comparison to those who did not participate in a Career and Technical Education program? The second research question, RQ<sub>2</sub>, asked what was the grade point average of students that participated in Horticultural Therapy in comparison to those who did not participate in a Career and Technical Education program? With these questions posed, the researcher had the



guidance to complete the study with the cooperation of SECEP, an alternative regional public school serving many students who are at – risk in Hampton Roads, VA.

Two of SECEP’s schools were chosen for this research for two primary reasons. The primary reason was SECEP’s Re – Ed Program, which stresses academic competence coupled with a focus on a responsibility to others, and a belief that academic instruction should be aligned to the real world (SECEP, 2011). The second reason the researcher chose SECEP was because both the Renaissance Academy (located in Virginia Beach, VA) and Deep Creek SECEP (in Chesapeake, VA) offer the HT program, which was a primary interest of this study; the Re – Ed Program also serves students who did not take part in a Career and Technical Education program who served as a control group. Additionally, while many have written about students who are at – risk over the years, no study was found linking the success of a HT program with any gains in self – esteem and/or GPA.

Before completing the study and analyzing the results, however it was important to understand the inherent limitations within the study performed. For instance, the study was performed within schools located in Virginia Beach and Chesapeake, VA. While the student populations within these schools varied from urban students to those living in more rural areas, they all ultimately reside within a relatively small geographic area. The study was also limited to a relatively small sample of twenty – three students. While the sample of students was relatively low, however students who participated were enrolled in the Re – Ed Program for a minimum of three quarters. The study also took place during one academic year, where it is plausible data from several years may yield more accurate results. Additionally, self – esteem was measured by one means, the Rosenberg

Self – Esteem Scale. Finally, GPA was the only means used to measure student success and achievement within the Re – Ed Program.

The participants in this study were specifically students in SECEP’s Re – Ed Program either at the Renaissance Academy or at Deep Creek SECEP and considered to be students who were at – risk. The two groups of students studied were those in the HT program, as well as students who did not take part in a Career and Technical Education Program. The researcher assumed that the results of this particular study would be applicable to other schools beyond the reach of Hampton Roads.

The instrument used to assess the self – esteem of these students was the Rosenberg Self – Esteem Scale. This widely used instrument is a short, ten question survey the students filled out on their own which, in turn, gave an indication of their level of self – esteem. This survey was chosen due to other researchers having shown its reliability and validity (Chiu, 1998; Hagborg, 1993). In addition to self – esteem, student achievement was also used to determine the success of the HT program by way of student GPA.

In order to participate in the study, each student and parent were given a consent form agreeing to participate in the study. Upon the student returning the consent form, the researcher conducted the Rosenberg Self – Esteem Scale survey during normal school hours, while GPA was later reviewed for each participating student.

After analyzing the survey results in addition to each student’s GPA, the researcher placed the results into two groups. The first group of students were those who were participating in the HT program, while the second group were those students who were not enrolled in a Career and Technical Education program. Because the goal of this

study was to determine if there were any benefits to self – esteem as well as GPA, the researcher conducted two separate *t*-tests to verify any statistical significance between the two groups of students.

## **Conclusions**

The first purpose of this study was to determine if there was any significant increase in self – esteem in students who are at – risk while participating in SECEP’s HT program to those who were not participating in any Career and Technical Education program. After completing the survey and subsequent *t*-test, the results from the twenty – three participants showed that  $t(21) = 0.34, p < .05 = 1.721$ . While the researcher noted that both the mean (HT participants = 20.17, Non – participants = 18.82) and median numbers (HT participants = 23, Non – participants = 22) were higher for those students participating in the Horticultural Therapy program, the *t*-test showed that the results were not statistically significant.

The findings for RQ<sub>1</sub> run counter to many reviewed research studies showing that people of all types and backgrounds generally showed an increase in self – esteem after joining a HT program as compared to others not in a HT program. There are perhaps several factors that might have skewed the data in favor of the students who were not participating in the HT program. For instance, the total number of participating students numbered only twenty – three; seventeen were not in a Career and Technical Education program, and six who were enrolled in the HT program. Secondly, the researcher cannot be certain that the students did, in fact, answer the questions of Rosenberg’s Self – Esteem Scale truthfully (though it is assumed they did). Additionally, the survey only used one administering/governing program, SECEP’s Re – Ed Program, which may

inherently lead to skewing data one way or another. With this in mind, it can be concluded that participation in a HT program will not significantly increase the self-esteem to students who are at – risk.

The second purpose of this study was to determine if there was any significant increase in student GPA among those participating in SECEP’s Re – Ed Program; students who were participating in the HT program were compared to those who were not participating in a Career and Technical Education program. After analyzing the GPA of the twenty – three participating students and a subsequent *t*-test, the results were determined as  $t(21) = 2.39, p > .05 = 1.721$ . In addition to the *t*-test showing a significant increase at the .05 level, the researcher also noted the sample means (HT participants = 2.42, Non – participants = 1.06) and medians (HT participants = 2.41, Non – participants = 0.41) were also much higher for those students participating in the HT program.

The results to research question RQ<sub>2</sub> are essentially in accordance with reviewed studies related to the topic. Students who are at – risk and participating in a Horticultural Therapy program showed a significantly higher GPA to those students who were not participating while in SECEP’s Re – Ed Program. Due to the small sample size, however many of the same potential pitfalls discussed with the results of RQ<sub>1</sub> may apply to RQ<sub>2</sub> as well. All things considered though, the researcher did determine there was a statistically significant increase in GPA for students who are at – risk while participating in a HT program.

## **Recommendations**

Horticultural therapy as a program for students who are at – risk is a topic that the researcher found needed more research to come to any clear conclusion as to if it will

enhance a students who are at – risk level of self – esteem or their GPA at school.

Several modifications could be made to the parameters of the study in order to find a more clear answer.

One potential change to the parameters of the study would be to have a larger sample of students to survey for self – esteem and GPA. The larger sample would not only provide more data, but it would likely provide more accurate data as well. A second revision to the parameters of the study would be to choose more than one school program and/or governing body. While SECEP certainly has quality programs and a solid reputation in Hampton Roads, adding a second school/governing body to the study could make for more concrete data. Another parameter to alter in this study would be to use a broader range of student achievement, in lieu of measuring student achievement only through GPA. While GPA can be a solid data point in determining student success, adding other elements such as attendance, attitude, and portfolios are other ways students' achievement can be measured. Yet another factor that could be altered in any future studies would be to take a sample that lasted longer than three quarters. While a three quarter time frame may offer good data on GPA, extending that period to a full year or more could improve the data received by the students. While these four recommendations to improve upon the study would be helpful, it is certainly not an exhaustive list, and other modifications could easily be made to increase the validity of the study.

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## APPENDIX A

### Rosenberg Self – Esteem Scale

Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

**NAME:**

1. On the whole, I am satisfied with myself.	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
2. At times, I think I am no good at all.	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
3. I feel that I have a number of good qualities.	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
4. I am able to do things as well as most other people.	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
5. I feel I do not have much to be proud of.	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
6. I certainly feel useless at times.	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
7. I feel that I'm a person of worth, at least on an equal plane with others.	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
8. I wish I could have more respect for myself.	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
9. All in all, I am inclined to feel that I am a failure.	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
10. I take a positive attitude toward myself.	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>

## APPENDIX B

### RESEARCH PARTICIPATION CONSENT FORM

Dear Parent/Guardian,

We are conducting research to find if SECEP's horticulture program has any possible benefits that may include an increase in self – esteem as well as an increase in your student's grade point average.

Your child's participation is voluntary, but we would like for your child to take a ten – question self – esteem survey. If you would like to see a copy of the survey ahead of time, we would be obliged to share that information with you.

We also ask to be allowed access to your child's academic records since your child began school at SECEP. You can be assured that nothing will be observed other than your child's cumulative grade point average while at SECEP.

There are no risks to you or your child in this study. If you have any questions about this research, you can call Jason Thomas at (757)650-6858 or email him at [jthom154@odu.edu](mailto:jthom154@odu.edu). You may also contact the Responsible Project Investigator, Dr. John Ritz, at [jritz@odu.edu](mailto:jritz@odu.edu).

Thank you for your cooperation. If you agree to participate in this project, please sign below:

\_\_\_\_\_  
Parent/Guardian signature      Date

\_\_\_\_\_  
Investigator signature      Date

\_\_\_\_\_  
Parent/Guardian printed name      Date

\_\_\_\_\_  
Investigator printed name      Date