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OPPORTUNITIES FOR AND BENEFITS OF CAREER AND TECHNICAL EDUCATION
FOR HIGH SCHOOL STUDENTS WITH DISABILITIES

A MASTER'S THESIS
SUBMITTED TO THE FACULTY
OF BETHEL UNIVERSITY

BY

DANIEL K. BURTON

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF ARTS

AUGUST 2021

BETHEL UNIVERSITY

OPPORTUNITIES FOR AND BENEFITS OF CAREER AND TECHNICAL EDUCATION
FOR HIGH SCHOOL STUDENTS WITH DISABILITIES

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Abstract

Students with disabilities struggle more than students without disabilities to graduate high school as well as finding a good paying job after high school. With the implementation of the IDEA act of 1975, there have been many different theories on what can help students with disabilities become contributing members of society. With CTE (career and technical education) courses being an option in more school districts, it is viable for case managers to consider the beneficial opportunities for their students to choose a path to success. With increasing data that students with disabilities often have greater success in a hands-on course, it is also becoming evident that this success leads students to be more likely to graduate from high school. When students with disabilities earn a high school diploma with real world work skills and training, it gives them a greater opportunity to be a successful member of the community and a sense of accomplishment. This thesis will discuss different pathways and opportunities that students with disabilities have and how CTE courses can give them a better chance of earning a high school diploma and gaining a good job or career from it.

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CHAPTER I: INTRODUCTION

Need for Vocational and Technical School Options

Special education has been an ever-developing process that gives students the opportunity to reach the same potential as the majority of their peers. Allowing classroom inclusion for students is the first step that allows for students to be given the same expectations as their peers, and with the right assistance and accommodations, many of these students can achieve success in the mainstream classrooms. Students with disabilities may have limitations that can prevent them from succeeding at a four-year college or higher education. Other students with disabilities may be able to get through a four-year college, but find that they would be happier and more successful learning a trade. Trade schools offer many different paths to many different careers, and a lot of these opportunities can start while the students are in high school.

Researcher's Story

The thesis researcher has a great interest in this topic as a former SPED teacher and current CTE teacher and has seen the benefit students gain from these courses. He was also a student in CTE courses, which helped spark his interest in working in a trade, prior to becoming a teacher. The author has seen first-hand how students with disabilities come into his program feeling defeated, and how students often act out in response to failing academically. The researcher has seen how hands-on training in a high-demand trade has given hope to students who thought that they could not have a successful future. Once students see this hope, it can motivate them to change their attitude, behaviors, and all-around academic performance in their high school career, often leading to giving the students a better chance to graduate. This author has seen students with disabilities who enjoyed and excelled in his course and decided to

transition into the community college to gain further training to become more of an expert in the field and attain a 2-year degree.

Therefore, this thesis will address the following questions:

Thesis Questions

1. What opportunities are there for students with disabilities to pursue in Career and Tech education during high school? What programs would be beneficial for students with cognitive disabilities or physically impaired disabilities?
2. What is the next step for these students? Would they go right into a career after high school or would they transfer into a trade school and what credits could/would transfer?

Vocabulary

CTE--Career and Tech Education

SPED--Special Education

SLD--Specific Learning Disability

OHD--Other Health Disabilities

EBD--Emotional Behavioral Disorder

IDEA--Individuals with Disabilities Education Act

IEP--Individualized Educational Plan

NOCTI--National Occupational Competency Testing Institute

RVTS--Regional Vocational and Technical Schools

CHAPTER II: LITERATURE REVIEW

The material used to write this thesis was found through the use of Bethel Library and ERIC. Key search phrases included “benefits of CTE for students with disabilities,” “trade schools for students with disabilities,” “preparing students with disabilities to transition to a career,” “accommodations for students with special education at a job.” Articles were chosen from a variety of years by authors with a variety of backgrounds to get a well-rounded perspective on the topic. Other data used was from the researcher’s own data from his CTE classroom such as previous assessments, IEP goals, assignments, etc...

Background

The path into the workforce is not the same for every student, and finding job satisfaction can be challenging for many students. Students without disabilities are more likely to obtain a four-year degree, which can put them at an advantage in the workforce. However, students that do not go to a four-year college can still find a successful and rewarding career and are more likely to do so if they attend a trade school. Levinson & Palmer (2005) noted in their article:

According to nationwide studies, as many as 66% of working adults never had a career plan and are currently working at their jobs because of chance factors or the influence of others or because it was the only job available. Only about half of these workers are satisfied with their job situation (p. 11).

Preparing students for the workforce is one of the most important roles of education. In order for students to be successful in a life-long career, they need to be prepared for that career in their secondary education. Most traditional education is focused on college preparedness; however, students that are better suited for working in a trade are better served when their

education includes work in hands-on programs, such as internships, on-the-job training, and career and tech education.

According to the Twenty-First Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, only about one-fourth of students with disabilities graduate from high school with a diploma; however, these students were less likely to drop out of school and more likely to be competitively employed if they received adequate vocational educational training in high school (Levinson & Palmer, 2005, pp. 11-12).

The ultimate goal for students with special needs is the same for students without special needs--to prepare them to be a contributing member of society. Ideally this would mean that each person would be given the skills necessary to maintain a full-time job with a certain level of success and feelings of accomplishment. There are plenty of ways that students with special needs can achieve this goal, which is why it is important to look at the current steps that are in place to help navigate their way to success. Just like general education students, there are not two special education students that will require the same path to successfully being a member of their community. So when it comes to designing a plan for the student to be successful, it is important to think of all areas of student interest and dislikes. Throughout this process of helping to set up students for success, it is also important for students with special needs to have a committed team of teachers, specialists, parents, family members, friends and others that will be able to advocate for the student's best interests (Wonacott, 2001).

In order for these students to have success in trade school, it is important for teachers, specialists, and parents to advocate for them, helping them obtain access to adaptations and accommodations. This can include student-specific Individualized Educational Plans (IEPs), a

dedicated IEP team, and a transition plan or strategy to either a trade school or the workforce. Once an individual is enrolled in trade school or working, it is important that they are equipped with the ability to request accommodations they may need.

The process of setting up students for success will revolve around the creating and implementing of students' IEPs. In 1975 the IDEA (Individuals with Disabilities Education Act), <https://sites.ed.gov/idea/about-idea/>, was a bill that was passed and included that IEPs were to be put in place that would require a comprehensive evaluation every three years (U.S. Dept of Education). The evaluation of students includes observations, tests, interviews of teachers and parents, medical information, and other evaluations. This process requires school nurses, physicians, teachers, psychologists, administration, family members, translators, etc. The IEP is required to be a measurable tool in which each member involved will be able to track progress and evaluate the data acquired to tell if progress is being made or if the IEP will need to be modified or changed. If changes are requested by anyone on the team, it requires the parents to be notified and a meeting is requested. When students with disabilities turn 14 years old, their IEP will need to include a statement of transition services. This important statement is the beginning of the steps of how to assist the student in achieving success after graduating from school. At the age of 16, students with disabilities will need to have a plan in writing on their IEP that will explain steps necessary to meet the goal of the student's plan after graduating high school (Wonacott, 2001).

For students with special needs to meet the ultimate goal of being successful after high school, it can rely heavily on their IEP team. When planning for a student with disabilities there are three important steps to remember. The first step is to understand the abilities, needs, and interests of the student. This step is important because it will lead to an achievable

expectation/goal for the student. If the bar is set too high, the student is more likely to become frustrated and will be more likely to fail. It is important to have close family members and friends of the student on the team that will be able to help determine what really interests the student and ability level of the student.

Second, the team will need to write out the goal. The knowledge of the team and especially the work coordinator will come into play to write a goal that lines up with the wants and needs of the student. The goal that is set will need to be reasonable and at a level that is in line with the student's abilities so that the student can be confident with and encouraged by their accomplishments.

The third step is the "how"--how is the student going to meet the goal? The team will need to put steps in place that will allow the student to be successful in meeting the goal. It is important that the team members only put steps in that they are actually able and willing to adhere to, as well as giving steps that work for the parents, such as driving the student to work or other activities needed to meet the goal. These steps should be broken down into achievable tasks that the student can complete in order, building on one another (Wonacott, 2001).

The IEP process is an ongoing process from the day it starts in a student's life to the day that the student reaches all of their goals and can be successful on their own without the IEP or when the student turns 21. During this time it is the goal of the CTE teacher to take the information from the IEP and make actionable steps toward meeting the student's goals. CTE teachers should keep ongoing data on each student's progress throughout the school year and report it to the case manager. The case manager and teacher can then use this data to help support the student. CTE teachers can provide important information on what skills the students show in a hands-on work environment. This can help the IEP team consider what paths students can take

to become successful in holding a job. According to Dougherty et al. (2018), “students with disabilities who had career-related instruction were more likely to graduate from high school” (p. 2).

Similarly, when students are working toward a job that they are interested in, it has been shown that they are more likely to graduate from high school. In addition, some students from the ages of 18 to 21 have not yet graduated, but are working toward graduation in a work study program. Students who are finding success and enjoying their work are more likely to graduate.

Programming Options

There are plenty of opportunities for students with disabilities that may not want to or are unable to go on to a four-year college. The original CTE programs mostly consisted of blue collar or hands-on types of work such as construction, auto, diesel, welding, custodial work, salon stylist, dental assistant, veterinarian tech. Although these programs are still available, lately CTE has been able to offer some more viable options with the opportunity to earn more pay. Programs such as “FAB LABS” where students will learn how to program and operate 3-dimensional (3D) printers and manufacturing equipment is a great opportunity for students with special needs. This two year program can be completed with no math requirements, which can be a great option for some students with special learning needs. Students with learning needs often have creative minds which this program will give students the opportunity to thrive. After earning a degree in such a program as this, students will be in high demand to work at a well-respected manufacturing company programming and running such equipment as 3D printers and manufacturing robotics.

Another program that students with learning disabilities can find success in is the installation of solar panels. With the world trying to find alternate and cleaner ways to supply our

energy needs, this can meet a growing and important need. This is a 10-month program where students learn how to work more with their hands and tools than with their intellectual mind. These are just two new courses in which students with special needs could become successful. However, some of the original CTE courses such as auto tech, auto body, diesel, welding, manufacturing, and construction are more in demand now than they have ever been. As of now these industries are having a very hard time finding anyone with or without qualifications to simply show up and work. Many of these jobs can lead to a salary between \$40,000-\$70,000 after 2-5 years of employment. With the recent bill passed to improve infrastructure and the increased numbers of people retiring in this trade, all of the careers listed above are likely to be in higher demand than ever before.

Not all students with special needs will be able to excel in all of the trades offered through CTE programs. Depending on the needs of the student, they may not be able or likely to succeed in a certain skill/trade. For example, students with physical needs may not be able to complete tasks in such areas as welding, auto tech, auto body, construction, or other trades that include heavy lifting or the ability to stand for long periods. This doesn't mean that these students cannot work in these trades in some respect. Such areas could be estimating, sales, etc... within a trade. On the other hand, students with certain types of learning disabilities are more likely to succeed in the hands-on, heavy lifting areas of these trades. The tables below from an article by Dougherty et al. (2018) show areas in which students with special needs are currently participating, as well as demographics and other statistics of this student sample.

Table 1. Summary Statistics for Students in the Analytic Sample.

| Characteristic | No CTE | Any CTE | Comprehensive | RVTS |
|-------------------------------|---------|---------|---------------|--------|
| Male | 0.499 | 0.584 | 0.586 | 0.584 |
| Asian | 0.051 | 0.036 | 0.041 | 0.031 |
| Black | 0.052 | 0.072 | 0.091 | 0.055 |
| Latino/a | 0.084 | 0.149 | 0.138 | 0.158 |
| Low income | 0.193 | 0.363 | 0.366 | 0.358 |
| SWD | 0.157 | 0.249 | 0.223 | 0.268 |
| MCAS math Grade 8 | 0.179 | -0.335 | -0.304 | -0.361 |
| 4-year graduation probability | 0.8 | 0.784 | 0.711 | 0.857 |
| 4-year graduation, SWD | 0.611 | 0.723 | 0.636 | 0.778 |
| N | 250,481 | 55,556 | 27,895 | 30,946 |

Note. Mean values of key variables shown for all students in the 2008 to 2012 cohorts. CTE = career and technical education; RVTS = regional vocational and technical school; SWD = student with disability; MCAS = Massachusetts Comprehensive Assessment System.

Table 2. Distribution of Participation in CTE by Setting Type and Disability Category.

| Disability type | No CTE | Any CTE | Comprehensive | RVTS | Total |
|---------------------------------------|--------|---------|---------------|------|---------|
| Communication | 73.6 | 26.4 | 8.9 | 17.5 | 4,882 |
| Specific learning disability | 70.5 | 29.5 | 11.3 | 18.2 | 29,014 |
| Other health impairment | 74.5 | 25.5 | 9.8 | 15.7 | 4,338 |
| Intellectual | 75.7 | 24.3 | 8.9 | 15.4 | 3,636 |
| Hard of hearing/deaf | 81.6 | 18.4 | 8.4 | 10.0 | 310 |
| Visual impairment/blind | 80.5 | 19.5 | 6.0 | 13.4 | 149 |
| Emotional | 83.2 | 16.8 | 9.1 | 7.7 | 5,188 |
| Physical | 86.2 | 13.8 | 7.5 | 6.3 | 174 |
| Deaf and blind | 87.5 | 12.5 | 10.0 | 2.5 | 40 |
| Multiple disabilities | 82.0 | 18.0 | 6.0 | 12.0 | 1,586 |
| Autism | 89.4 | 10.6 | 4.0 | 6.6 | 1,559 |
| Neurological (traumatic brain injury) | 77.1 | 22.9 | 7.9 | 15.1 | 2,485 |
| None identified | 83.5 | 16.5 | 7.3 | 9.2 | 252,511 |

Note. All values expressed as percentages except in the column marked total, which contains counts. CTE = career and technical education; RVTS = regional vocational and technical school.

The chart above shows that students that have learning disabilities in the areas of communication, specific learning disabilities, other health impairments, and intellectual disability had the highest enrollment in some type of CTE work or regional vocational and technical schools (RVTS). Students with disabilities in the areas of physical, deaf or blind, and Autism had the lowest enrollment in CTE courses or RVTS. This shows us that there are students with disabilities that are not given pathways to be successful in CTE courses. It is expected that some of these areas of disabilities, such as deaf or blind, face greater challenges in CTE courses; however, as a CTE teacher it is important to find alternate ways in which students with these disabilities can also find success in CTE courses.

In order for students with disabilities to be successful with programs offered in CTE it is important that CTE teachers collect data on the progress of these students. CTE teachers will

need to understand the individual IEPs in order to set expectations that are reasonable for each student. CTE teachers do not have to figure all of this out on their own; they should use the case manager and the rest of the IEP team as a resource in helping set realistic goals and what aids are needed in helping the student meet the requirements of the course. Once the CTE teacher feels comfortable with the goals and plan set for the student, then the next step for the teacher will be to keep data to evaluate the progress made by the student. This data should be kept confidential and reported back to the case manager as needed or by the midterm at a minimum.

At any time it is important that the CTE teacher reaches out to the case manager if they want to make any changes to the plan or accommodations that they have in place. If the CTE teacher feels like a change is needed to the plan, then the case manager will have to decide whether or not a IEP meeting will have to be held. Any changes made should not be put into place until the change is made on the IEP and the case manager has received confirmation from the parents/guardian and team. Through trial and error, changes that are made will help students with disabilities find the pathway that is needed for them to be most successful. The most efficient changes that can be made are based on reliable data collected from the staff who works most directly with the student, so it is crucial that CTE teachers keep good daily records and communicate it well with the rest of the IEP team.

While teachers should allow for and plan accommodations for students in their programs to be successful, it does not mean that they always should make modifications. For example it is very important for many reasons that ALL students have to understand and pass safety tests before working with certain equipment. Such safety tests and assignments cannot be modified to a point where they no longer keep the student or others safe. There are ways that students with disabilities may be given accommodations to help them pass the test such as one on one or small

group assistance where the tests/assignments can be read to them, but they will still need to pass the test with the same score as all students in order to work safely in the shop. The safety content must still be mastered to an acceptable level.

Student Success in CTE

CTE teachers can learn from and be inspired by success stories; below are a few stories of success from the article “Preparing Students with Disabilities for Trade School” which briefly describe the steps that students with disabilities took to become successful.

Latoya Bristor: A young woman with an intellectual disability, Latoya Bristor had difficulty finding employment until she began a one-year culinary training program at Brewster Technical Institute in Tampa, Florida. Latoya did so well that an establishment offered her a one-year internship before graduation. When the internship ended, she landed solid employment with Wright’s Gourmet Deli. She is grateful for the vocational rehabilitation program that enabled her success. “I would recommend this program to everybody,” she says.

Jessica Knoepfler: Dogs are one of the few things that brought young Jessica Knoepfler out of her shell. A hard-working young woman with short-term memory problems, Jessica knew since her freshman year of high school that she wanted a job working with dogs. After attending a groomer training program and finding a mentor who helped her thrive, Jessica became a success story. She now co-owns Just Paws Pet Salon in Minnesota.

Noah Melhorn: As a young man working through dyslexia and learning disabilities, Noah often found himself falling behind in class. Noah’s mom, Terri Fierstine, says Noah caught up in high school due to perseverance, many meetings with teachers, numerous

IEPs, phone calls, e-mails, and summer tutoring. Noah graduated from a wildland firefighting program at Itasca Community College in Grand Rapids, Minnesota, and today works to keep others safe as a wildland firefighter in Arizona (Affordable Colleges Online, 2020, p. 11).

The students mentioned above were successful due to a variety of factors. The first step that needs to be taken is to make sure that the student has a committed and knowledgeable team behind them. The second step and what seems to be the most important step is for the team to be able to identify the key problems that are preventing the student from learning. To identify such problems the team will need to continue to evaluate the student and find the areas where they are being successful and the areas where they need that extra help. Once the team finds these areas, then they will need to be communicated with one another. A plan will be developed with reasonable goals and steps to overcome struggles and capitalize on successes. That seems to be what took place in each of the successful stories above. Noah Melhorn was falling behind in class (problem identified); after hard work, many meetings with the team, numerous IEP meetings and changes, communication, and tutoring, Noah graduated from a firefighting school and had a successful career as a wildland firefighter.

All students, with disabilities and without, can find success in CTE programs. The difference seems to be that more general education students come into the programs with a better chance of attending a four-year college after graduating from high school. General education students do not face the same challenges as students with disabilities. For these two reasons specifically, it often changes the way students view the programs in CTE. Although students without disabilities may choose to find success in CTE programs, they often have other opportunities that may be more appealing or that they can fall back on. Students with disabilities

often have not found success in their general education classes or they have struggled to find a good job fit outside of school. CTE is a pathway to give students with disabilities hope in finding success not only in the classroom, but to then take what they have learned and implement it into a career where they can become a contributing member of society and attain greater self-worth. Although both students with disabilities and students without can find success in CTE programs, it is often more meaningful and a last resort of sorts for students with disabilities to find success before graduating high school. For these reasons this writer believes it provides them with more motivation and to find that extra stamina to do well. CTE programs do a good job of providing an atmosphere that simulates a real working job scenario; this also provides students with instant gratification with completing a job. It is this type of real world experiences that can stir the interests of students with disabilities and encourage them to work hard.

Transition to Trade School

According to Affordable Colleges Online (2020), several reasons students with disabilities may want to consider trade school include building skills for greater independence, the ability to earn a stable income, the focus on developing social skills, and a more structured class schedule than traditional colleges. Additional benefits of a trade school include more achievable admissions standards, hands-on experiences, shorter programs, and often a lower cost than four-year colleges. This alternative to four-year colleges can be a great bridge for students with disabilities from high school to the workplace.

Even if students are undecided on what they want to do after high school it is still important that the student's IEP team has set a plan for some type of transition to real life after high school. The planning from school to post-school activities should include multiple opportunities where students can build a diverse set of skills. The transition planning by the team

should allow for the student to explore different pathways that are suitable or reasonable for that student to eventually establish a successful career.

Successful transition for students with disabilities may also include obtaining skills for independent living and community participation. Depending on the student, the steps and outcomes may look different, but the end goal is the same, which is to have the students be able to perform at the highest level they are capable of to be a contributing member of society. With that goal in mind, it will be up to the student and their parents and the rest of the team to determine what that looks like.

Although not all of these students will find a successful path with a CTE program, many do. CTE programs are able to give students an experience of what success feels like and how it feels good to accomplish a task. Many of these students have not had success in the typical classroom setting. However, many of them are able to be more successful in a hands-on learning environment where they attain the skills that can be utilized in a career post high school. Sometimes this means they can take these skills and go right into the career field; other times it means that they can be a step ahead or even earn some credit to then transfer into a trade school where they will learn more skills to become a better skilled tradesman.

Transition to the Workforce

When assessing the plan for a student to transition from CTE or high school to the workforce it is important to remember that “students with disabilities transition more easily from school to post-school life with the assistance of professionals invested in their success” (Affordable Colleges Online, 2020). According to Roddy Theobald (2018), there is evidence from the National Longitudinal Transition Study-2 that finds that “students with disabilities who enroll in a ‘concentration’ of at least three or four credits of CTE courses in high school are more

likely to be employed within 2 years of leaving high school than observably similar students with disabilities who enroll in fewer CTE courses in high school” (p. 1). This simply means that if you can have a student be successful through CTE or work programs in high school that it is more likely to benefit both the students and the employer post high school. It can be difficult for students to pick a profession when they are a teenager, so it will be important for the team to keep the students’ main goal as diverse as possible when trying to reach it.

According to Levinson & Palmer (2005), when transition planning and figuring out how to best prepare a student to transition from high school to the workforce, some of the following thoughts should be considered such as:

What are the student’s interests?

Is the student capable of doing this work as a profession?

In what other professions could these acquired skills be useful?

If a student and the team decide that the student has an interest in car repair then it would be in the student’s best interest to see what CTE programs would help him most to pursue that career path. Since CTE offers several areas of mechanic repair such as diesel mechanics, auto tech, auto body, welding, etc..., it is important for the team to consider what program or programs throughout high school will allow the student to have a diverse knowledge to be successful in transitioning from high school to two-year college or straight to the workforce.

Allowing for the student to take several of these CTE courses throughout their high school years will set them up to be better prepared to transition into the workforce. For some students it will be necessary to put in their plan to know how to advocate for themselves and what accommodations they may need from an employer. In her work for the Learning Disabilities Association of America, Dale Brown discussed many possible types of problems a

person with disabilities may face on the job, and then offers many accommodations that a person with those problems could request or use. These are included in Appendix A. With the right planning and the right accommodations for students with disabilities, the transition from CTE programs to the workforce has proven to be very successful.

CHAPTER III: DISCUSSION AND CONCLUSION

Summary of Literature

Throughout the articles and research, it was suggested that CTE programs offer a successful option for students with disabilities to increase their chance to graduate from high school and also the ability to transition into the workforce. With this said, the research also explained how many other variables have to be taken into account in order for students with disabilities to be successful. It is these variables that I as a CTE teacher will have to be aware of and make sure that I am implementing them into my daily teaching and interactions with students with disabilities.

As some of the articles mentioned, students who were struggling in the regular classroom setting often ended up performing better in the regular classroom after being in the CTE program. It is important for me to keep this in mind in my classroom. Many students who have challenges in the regular classroom setting are often more successful in a hands-on setting. This is where they find a sense of success and accomplishment, which may propel them to be motivated in other areas of learning and help them in graduating high school. Training in a CTE program and having a high school diploma will put them at a much higher chance of receiving and keeping a good paying job.

Since the disabilities act (IDEA) started in 1975 the number of students receiving services in the US has been increasing ever since. According to Jinghong Cai (2019), “the number of IDEA students who enrolled in CTE at the secondary level increased by 73 percent from less than 500,000 in 2008 to more than 800,000 in 2018. Among the CTE secondary students, the percentage of IDEA students increased from 1 to 8 percentage points in 20 states, the District of Columbia, and Puerto Rico” (paras. 6-7). This means that in all over the country, it

is proving to be important that schools provide pathways in which students with disabilities can be successful.

Giving students the opportunity to attend CTE courses has proven to raise the grades of students with disabilities and heightened their chance to graduate. According to Powell (2018), “engagement in CTE courses enhances learning opportunities for students with disabilities and provides real-world skill development. Students that take advantage of these course offerings level the playing field for career development” (p. 3) Many students with disabilities find little success in the mainstream high school curriculum due to SLD, EBD, OHD, and other learning disabilities. When these same students are given the opportunity to learn a hands-on trade that interests them, they often will find it a rewarding experience. In many cases this is the first time that students with disabilities will find success in a high school course, which often leads to them finding more success in their other classes.

Professional Applications

With the information that I gathered from this research, I believe that I will be able to add things to my teacher toolbox to help me become a better teacher. The most impactful area of research that I will bring to the classroom and for my colleagues to know is how important it is for the CTE teacher themselves to be involved in the development and implementation of the IEP created for the student. It will be important for me to communicate with each student’s case manager when I have useful data to share.

As a CTE teacher I will find more ways of rewarding students with disabilities to give them the successful feeling that many of them crave. Altering my curriculum, when needed to accommodate for the students' disabilities, will be crucial in order to give them a chance to succeed. An important step that I will need to take is being willing to be part of the IEP

development and implementation of the plan. I will need to keep data and assist in making changes as necessary. In order to assess students in my classroom to make sure they are progressing, I will be using an assessment from the National Occupational Competency Testing Institute (NOCTI), as discussed by the Pennsylvania Department of Education (2018). This test is used to measure the progress of my students' ability to show what they have learned. This assessment will be given twice a year, once at the beginning of the year and once near the end. The data will help show what progress they have made and how I can make changes to better improve test scores for students with disabilities and general ed students as well. It will be important to be aware of accommodations that students may have listed on their IEP in order to set them up for success while taking this assessment.

The most important piece for students with disabilities to be successful revolves around their IEP and the team responsible for creating and implementing it. As a former special education teacher (SPED), I have seen what can happen when the IEP teams fail to create or follow up with the work needed to create and implement the IEP for a student. SPED teachers are often overloaded with paperwork and high caseload numbers which is one reason many students with disabilities are not getting the best overall help they could be getting. The needs of students with disabilities are ever-changing in the classroom and in life and often need changes to their plans to be successful. Unfortunately, in order for changes to be made to their IEPs, the process requires an IEP meeting and additional paperwork and signatures from each team member. This process requires a lot of time and organization from the already overloaded Sped teacher, so these important changes often go unchanged.

As a CTE teacher I will need to be aware and familiar with my students with disabilities and their IEPs. I have and will continue to communicate with the case managers of the students

with IEPs. When I see changes that could be made to the student's daily activities that could help them be more successful, I will be sure to narrow in on one or two changes that could allow the student to be successful over the whole school year. I will communicate this to the case manager, noting what changes are being requested with data backing up the changes that I would like made. This way I will not be contributing to overload the case managers with unnecessary work. In order to help and build relationships with case managers, I could write up goals and objectives for students with disabilities. This will help to alleviate some of the stress of planning for the IEP for the case manager. I have seen how some case managers struggle with writing goals and objectives for students in certain CTE programs that the case managers may be unfamiliar with; this is another area that I could be a resource for the case manager.

Limitations of the Research

Some of the areas that are still open for research--when CTE programs started, they were primarily blue-collar jobs. Now other areas are being introduced, such as robotics and manufacturing, which are more sophisticated areas that require more intellect in combination with the hands-on skills. For example, electric cars will need to not only be able to do the mechanical work, but will also require more computer work. In manufacturing, instead of working a lathe alone, they will also be able to program computer software to design a product.

One challenge of these newly developing areas is that they will require more math and science than what the older CTE programs require. This may pose a problem for students with learning disabilities. More certifications are also being required for many fields of work, which often require passing a written test or other academic assessment.

There is not a lot in this area that has been studied yet, and some of it is still developing, so it can be difficult to study. It will be important for CTE teachers to continue to stay updated

with new technology in their area of expertise and to communicate this information with the IEP teams, administration, and advisory teams. Having a better idea of what may be happening in the future with changes in technology will allow us to study what will likely work better for students with disabilities attending CTE programs.

Implications for Future Research

One opportunity for novel research is studying in what areas SPED students may get left out of prime career opportunities due to struggles with certification tests. To help these students in CTE programs, there will need to be building blocks put into place to get them to the same level as their peers. There will need to be accommodations or additional assistance to help them master the same information as their peers. Students will still need to meet certain standards and requirements for safety, so it is not a matter of lowering expectations, but finding ways to assist students in meeting the expectations.

Implications for Professional Application

These limitations could negatively affect the success of students with disabilities for several reasons. Some areas of technology that used to primarily rely on hands-on skills are now requiring more technical academic skills, such as computer programming and math. This may cause another hurdle for students with disabilities. Another hurdle will be for students with disabilities to find ways to pass certification tests which are now becoming more critical to acquire a higher paying job within these same professions. Such tests usually cannot be modified for students with disabilities and the few accommodations that can be made are significantly helpful. With these hurdles identified, it is important for CTE teachers not to give up on students with disabilities, but instead find alternative ways to keep these students engaging at a high level with high yet reasonable expectations.

CTE will be limited to teaching students with disabilities certain math standards or computer programming skills that may be necessary for students to reach the top of the trade which they may want to pursue. This information is critical to relay back to the IEP team where it would be in the best interest of the student for the team to integrate such math skills and computer programming skills into the goals and objectives in their IEPs. As technology in CTE shifts and changes, IEPs and their goals will need to adapt in ways that will still allow students to find successful and fulfilling career paths. Therefore, I will, as a CTE teacher, bring my experiences and knowledge in assisting teams plan more effectively relevant courses of study for my students.

Conclusion

With the information I have gathered, it seems clear that the most important area that students with disabilities need the most time and effort in to be successful with taking CTE programs is to have an extraordinarily IEP team. This includes the CTE teacher and if available, a SPED teacher that also works directly with CTE programs. The first important step is identifying the student's likes, dislikes, strengths, weaknesses, abilities, and desire to learn is important in placing him in a successful environment in the CTE program. It is important that all team members of the IEP team are a part of this decision-making process.

Once a CTE program is identified, it is important that the team creates reasonable goals and objectives of high rigor that the student is capable of achieving around a student's interests and preferences. These goals and objectives should include any accommodations or modifications necessary. The goals and objectives should also be in line with the job and associated field that the student has chosen and be applicable to the CTE program in which they are enrolled. The work coordinator from the IEP team should work with the rest of the IEP team

to help create the transition portion of the IEP, laying this goal out into measurable goals and objectives. It will be important that each team member collects data and is able to measure the success of the student. This information will be important to have when evaluating the students and can/will be used in order to make any necessary changes. When making changes to the IEP to help the student become more successful, communication with the case manager will be needed, along with approval from the rest of the team.

With CTE programs changing from more direct hands-on to more robotics and higher technology, it will be important for CTE teachers and the IEP teams of students with disabilities to be aware of the student's current skill set and ability levels. This will allow the team to take a realistic approach when helping a student decide if a particular trade is a good fit for that student. If such trades are becoming more advanced, it will be important for the IEP teams, CTE teachers, administration, and the industry partners to work together to find accommodations and modifications that could work to shrink the gap in order for students with disabilities to be able to be successful in these trades.

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Appendix A

Job Accommodations for People with Learning Disabilities

Job Problem: You have severe difficulty reading

Possible accommodations:

- Get voice output on your work computer.
- Ask someone to read to you.
- Have people read written notes on your voicemail.
- Request that your boss gives you oral rather than written directions.
- Ask that important information be highlighted.
- Use a reading machine.
- Have people talk to you instead of writing you letters.

Job Problem: Your reading problem is not severe, but it is still hard for you to read large amounts of material

Possible accommodations:

- Attend meetings about the material.
- Discuss the material with co-workers.
- Obtain taped versions of documents.
- Ask someone to tell you the key points.
- Manage your work so that you have enough time to read what is required to get the job done.
- Get information from drawings, diagrams, and flow charts. Your supervisor, team members, or subordinates may be able to organize some information in this way.
- Use voice output on your computer.
- Request shorter versions of documents.

Job Problem: You lose things frequently

Possible accommodations:

- Organize your work area and keep it that way! Work with your supervisor and team to assure that common areas such as tool stations, files, and bookshelves stay neat.
- Put important objects, such as keys, in the same place each time you use them.
- Color code items.
- Keep things on shelves, bulletin boards, or other places that are visible; avoid storage in drawers or cupboards.
- Attach important objects to the place they belong. For example, you might tie your scissors to a hook bolted to your desk, or place important documents on your bulletin board so they do not get lost.

Job Problem: You have difficulty following spoken directions

Possible accommodations:

- Ask people to tell you important information slowly and clearly and in a quiet location.
- Ask people to write things down.
- Request that people follow-up their conversations with an e-mail note.
- Ask people to demonstrate tasks, then watch you do it.
- Take notes and ask your supervisor to review them, or write a memo that summarizes the information.
- Repeat instructions back to people, making sure they verify that your interpretation is correct.
- Tape-record important procedures and instructions so you can playback and review as needed.
- Ask several people for feedback about how to do a task.

Job Problem: You have difficulty understanding the underlying message of what is said

Possible accommodations:

- Ask people to talk to you directly and to be specific in their message.
- Ask questions designed to draw out hidden meanings. For example: "Are you saying you disagree with me?" And, "It sounds like you are irritated because you think I did something wrong. Is that true?"
- Come up with a hypothesis about what a person meant, if you find yourself in a situation where you think there is a hidden meaning. Then discuss the interaction with others and study the surrounding events to assess your accuracy.
- Develop a relationship with someone who can let you know if a misunderstanding seems to have occurred. Either privately or within the conversation they can clarify the miscommunication.

Job Problem: You tend to forget deadlines

- Use Web-based reminder systems such as [Remember-the-Milk](#) which sends you reminders via e-mail, instant message, or text message.
- Use a voice organizer or signal watch to remind you of scheduled events. Some telephone voice mail systems have scheduling reminders that ring at a specific time and even play a reminder message.
- Use a tickler file with a section for each month and a section for each day. Put follow-up notices in the file and review the file each day.
- Ask your supervisor (or a fellow team member) to remind you of important deadlines or to review priorities and deadlines on a regular basis.

Job Problem: You have difficulty doing more than one task while managing interruptions from co-workers

Possible accommodations:

- Put up a "Do Not Disturb" sign when you really need to work without interruption.
- Write down what you were doing when interruptions occur, so that you can resume your work seamlessly.
- Do one task at a time. Do not start a new one until the current one is complete.
- Initiate telephone calls rather than waiting for people to call back.
- Ask your supervisor to clarify priorities.
- Work on major projects early, late, or on weekends when the office is quiet.

Job Problem: Your spelling and grammar are poor

Possible accommodations:

- Use spell check and grammar check computer software.
- Use software that predicts the word you are going to write based on the first few letters you type.
- Use a computer that says what you wrote on the screen. Hearing your words may highlight mistakes.
- Ask a colleague to proof your work before you consider it complete.
- Proof only those documents that must be proofed. Do not be a perfectionist.

Job Problem: When you copy or calculate figures, you tend to reverse or confuse number sequences

Possible accommodations:

- Say aloud each number as you write or type it to ensure that it is correct.
- Do calculations twice, checking to see if the answers are the same.
- Use a talking calculator.

Job Problem: You have no inner sense of direction (you have been known to get lost in your own building)

Possible accommodations:

- Use maps and keep copies handy, both at home and at work.
- Have directions written, highlighting significant changes in direction.
- Ask people to accompany you to unfamiliar places.
- Practice going from one place to another using maps and noting landmarks.
- Hang pictures or other items on walls in ways that make the left and right side different from each other.

Job Problem: You are easily distracted and you work in an open space

Possible accommodations:

- Ask to move your work area to a more enclosed space.
- Arrange to work at home.

- Request to work in a location that is away from noise and busy office traffic.
- Identify file rooms, private offices, storage rooms, and other enclosed spaces that might be used as alternative work spaces.
- Use a white noise machine (creates background noise that covers up other, ambient sounds).

Job problem: You have short-term memory problems (details such as names and numbers tend to be easily forgotten)

Possible accommodations:

- Use mnemonic devices to remember sets of information. For example, HOMES is the acronym for the names of the Great Lakes: Huron, Ontario, Michigan, Erie, Superior.
- Create charts (often called graphic organizers) that allow you to quickly find the information you want.
- Use web tools such as [Evernote](#) which allow you to copy and paste information from websites, create diagrams, record information, and add comments and tags to information that you find. You can send the material to your computer, cell phone, or handheld device and access it.
- Think about new information and try to associate new ideas with facts that are already familiar.
- Make good use of your computer software. Sometimes, well-designed menus and help features can assist you.
- Use a miniature tape recorder or voice organizer.
- Have co-workers check with you to be sure that you understand. Repeat back while they confirm.
- Obtain information ahead of time (such as a list of conference participants so you can review names and affiliations ahead of time).

Job problem: You have difficulty learning a lot of information quickly in intensive training classes and conferences

Possible accommodations:

- Ask for written materials ahead of time. If the request is refused, ask former students to loan you their materials.
- Sit in the front and/or center so you can more easily follow what is said.
- Ask former students to brief you on the training.
- Tape record for review. Get telephone numbers of co-trainees for later follow-up.