

The Pennsylvania State University

The Graduate School

College of Education

**PRE-SERVICE TEACHERS' PERCEPTIONS AND ATTITUDES
TOWARD CAREER AND TECHNICAL EDUCATION**

A Dissertation in

Curriculum and Instruction

by

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Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Doctor of Philosophy

August 2009

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ABSTRACT

Historically, divisions between academic and vocational education -- what is now commonly referred to as career and technical education (CTE) -- have been stark and consistent. Such divisions often create circumstances that sully the educational experience for teachers and students alike. With regard to CTE, many of these divisions stem from a lack of knowledge or familiarity with such programs. Unfamiliarity with CTE programs is typically accompanied by a lack of understanding of CTE students as well, particularly about their intentions and expectations. This study explores preservice teachers' perceptions and attitudes toward career and technical education (CTE) in an effort to address these historical divisions.

Questionnaire data were collected from secondary education majors representing multiple certification areas who were completing preservice teaching experiences as a requirement within their teacher education programs. Findings revealed a statistically significant difference between the perceptions and attitudes of participants who were graduates of comprehensive high schools (CHS) and those who were graduates of private schools, charter schools, or magnet schools (PCM). Results show that CHS graduates have a much better understanding of CTE than their PCM peers, and that the sources of knowledge identified by these two groups differed noticeably. While CHS graduates were far more likely to have identified their source of CTE knowledge as "high school-related exposure," PCM graduates indicated "external exposure" knowledge sources as their leading influence. Within the construct of "external exposure," PCM grads responded that media sources were significant contributors to their knowledge of CTE students in particular.

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ACKNOWLEDGEMENTS

First and foremost, I'd like to thank God for my mental and physical health and for surrounding me with loving and supportive people.

To my advisor, mentor and friend: Dan, I'll never be able to adequately express my gratitude for all that you've done for me. Thanks for challenging me. Thanks for supporting me. Thanks for being so giving of your time. I promise to "pay it forward."

Dr. Gray, thanks for showing me the ropes of CTE and guiding me through a new world of possibilities. Also, thanks for sticking with me, even through retirement. Dr. Nelson, thanks for being instrumental in my arrival at Penn State and for not hesitating to step up when I needed you. Dr. Yoder, in a very short amount of time, you've made a major impact on my progress. I most certainly would not be at this point without your help.

Dana, thanks for being, not only, such a wonderful colleague and mentor, but an inspiration in general. I feel fortunate to have worked with and learned from you.

Ms. Schmidt, Ms. Nastase, Ms. Taby, and Terri "Sunshine" Watson: Thanks to each of you for being so great at what you do. You are a special group of ladies. I will miss each of you.

Jamil and Sharif Bey, we have work to do brothers...let's get to it. Nancy, Rezelie, Stanley and Michelle: Thanks for your constant support and encouragement. Stephanie, it's been a long road, glad we're finishing together (don't start crying). Dawn, my office-mate, colleague and friend: It's been great working with you (even in our tiny little office). Although I won't be within arm's reach anymore, my support and encouragement are not bound by distance.

To the farm group, Amy, Cole and Dawn: This was a lot less grueling with you guys around. Here's to extra cheese pizza and (seemingly) endless writing. To my lifelong friends, Dimika, Shonda, Natalie, Curt, Cedric, Jay, Harold, Marlon, Damion, Tyrone, Jarrod, Donnelly, Byron, Shannon and Cogee: Thanks for your friendship and all the great memories.

To the Napoleon, Peters, Frick, Edwards and Landry Families: No accomplishment, great or small, is accomplished alone. Thanks for always creating opportunities and circumstances for me to flourish within. I wish I could write each of your names on my diploma. This is my way of doing so.

To my sister, Tracy Napoleon Blanco: You are my oldest and dearest friend and you've always been supportive of me. I am proud to be your little brother. I love you.

To my father, Larry Napoleon, Sr.: Daddy, thanks for being an exemplary father. Your work ethic inspires me every day of my life. Thanks for the many sacrifices you've made over the years. I am honored to share your name and proud to have shared it with my first-born son. I love you dad.

To my mother, Cheryl Napoleon: Momma, thanks for being my single greatest advocate and supporter. Aside from my wife and sons, you were the most powerful driving force behind getting this done. It makes me very happy to share this with you. I love you.

To my wonderful wife and friend, Kaelen: What a journey this has been sweetheart. A few years ago, you said you would follow me anywhere. You did. I said I would get this done. You believed. Well, it took longer than I thought, but here we are. So, is it your turn now or what? ☺ I am extremely thankful for your support and patience. Most of all, thanks for being the center of our home-life. Despite the stresses of completing this program, coming home always guaranteed comfort. I thank you. I love you.

To my sons, Larry, III and Douglass: I can't express how great it was to have you both run to meet me at the door and cling to my legs every evening when returning home after a 13 hour workday, particularly toward the end of this process. Every night at that moment, I had the motivation I needed to go back to work on this project again the next morning. Your mom and I have wonderful hopes and dreams for you. We love you both tremendously.

Chapter 1

Introduction

For a century, the concept of comprehensive public high school systems has been at the very core of discourse in the United States. A truly comprehensive public high school system is, in part, one designed to serve a wide variety of students in a wide variety of ways. In other words, different student needs and interests are recognized and addressed in express and deliberate efforts. We see these efforts not only in the use of differentiated or “tracked” curricula but in more focused ways of identifying students’ interests and needs as well: honors students have a unique curriculum that addresses their academic gifts; special needs learners receive appropriately moderated instruction, based on federally mandated individualized education programs (IEP); physically challenged students have structural concessions made on their behalf; career and technical education (CTE) provides options to students who may be more interested in pragmatic exploits than those predicated solely on theoretical/academic foundations.

High school teachers are the people who work to see that these various forms of differentiation work to serve students’ best interests and greatest needs. The majority of teachers do this by teaching all types of students enrolled in their “common” or “core” (mostly academic) courses, while the remaining teachers focus on students (often select students) working in special areas and programs (music, art, physical education, International Baccalaureate, etc.). Among these latter teachers and programs, my interest lies in Career and Technical Education (CTE). Given that CTE students are understood to be one of many student sub-sets, they (and their program) suffer typical misunderstandings and stereotypes as do other student sub-sets.

Understanding these students' interests and needs heavily impacts the ability and likelihood of a "regular" high school teacher to effectively serve these "unusual" students.

A Brief Historical Overview

In 1918, the Department of Interior Bureau of Education produced a document entitled the Cardinal Principles of Secondary Education (Department of Interior Bureau of Education, 1918). This composition was basically a collection of essays that addressed education through seven "principles" that, together, encompassed education in a holistic manner. The fourth essay in the document, entitled "vocation," addressed the relevance of vocational training to early 20th century society. Its position was that the aim of education, vocational education (VOCED) in particular, was to enable one to provide for himself and his family, and, through this work, find whatever personal fulfillment possible. During the early 20th century, which was characterized by unprecedented numbers of children attending school, vocational education, the predecessor of career and technical education, was in essence a manifestation of the "social efficiency" theory that was popular at the time. The philosophical underpinnings of social efficiency suggested that students should engage in educational pursuits that would complement their aptitude level and likely capacity to contribute to society (Kliebard, 2004).

As times changed so, too, did the curriculum of vocational education. By the 1960's, its focus had become more reflective of the learners' needs, as leading educators and society at large moved in the direction of John Dewey's philosophy. Dewey believed that society's needs would be fulfilled through meeting the needs of the individual. The contributions of the individual, Dewey argued, best established a thriving democratic society; conversely, social efficiency was nothing more than social predestination (Dewey, 1916; Dewey, 1938; Wirth, 1983). The

acceptance of this philosophy, therefore, changed the way VOCED curriculum was designed. The focus became less narrow and singular in its attempt to provide students with a certain employable skill set.

In addition to preparing students to contribute to the nation's workforce (hence economic growth), VOCED added a social component in the 1960's. The curriculum was not limited to instruction related to specific skills but was broadened in many respects to include a focus on workforce habits and workplace decorum. This change was brought to the forefront in large part due to the changing face of the vocational education student. Beginning in the 1940s, over 20 million people moved into urban areas from rural parts of the country (Arnold, 1964; Harris, 1963). Opportunities for small farmers were in decline and schools could address adaptation issues related to their entering a new urban environment and workforce.

During the mid to late 80's there was an ideological shift among the vocational education community that put it in a position to be more effective than ever. Vocational education, it was said, needed to change. There needed to be an infusion of academic focus along with its focus on vocational "training" (Hyslop, 2007; Lewis, 2005, Zirkle, 2004). This would prove to be the ideal time to *re-introduce* vocational education the country. Wisely, this re-introduction of vocational education included a change in image as well as in content and curricular approach. The first and most intriguing, if not the most important, change was that of the name. The title change from vocational education to career and technical education was monumental in its attempt to reshape what imagery is conjured up at its speaking. Career and technical education more aptly represents what the program is and what its intended results are. Whereas the idea of a vocation speaks to the presumption of a job, a *career* speaks to people's sensibilities of a livelihood. Likewise, the term *technical* speaks to the methodological, even scientific, aspects of what is taught in many programs that most have summarily dismissed as a dumping ground for the incapable. The title "*career and technical education*" more adequately reflects the vision and

detail that is required to have a truly effective program in today's society (Zehr, 1999; Foster, 2007). Many contemporary CTE courses are quite sophisticated and involve work that requires high cognitive aptitude as well as physical dexterity. This reality exists in direct conflict with many of the outdated perspectives that still commonly castigate CTE within the courtroom of public opinion.

Personal Statement

For several years, now, I have supervised pre-service teachers who are seeking certification to teach high school social studies. Based on my experiences over the course of eight semesters, I learned that most of these pre-service teachers have little awareness of CTE, its students, and perhaps most importantly, the role that high school teachers with academic subject certification play with regard to both. I do not believe that my students know how high school students avail themselves of CTE programs, or how such programs operate financially, nor do I believe that most pre-service teachers understand what scholastic expectations CTE students hold and how my pre-service teachers might be useful toward assisting these students to achieve their desired ends.

My research questions are crafted upon these beliefs. I hypothesize that there are misunderstandings about CTE among pre-service teachers in most cases, and no understandings about CTE in other cases. The problem, as I see it, is that the *lack of understanding that I speak of makes it impossible for future academic high school teachers to best serve CTE students.*

Given the importance of comprehensive educational opportunities and CTE's vital role in creating such opportunities, I believe it will be beneficial to establish and analyze the disconnect

in understanding that seemingly lies between pre-service teachers' preparation to teach academic subjects in high school and their knowledge and perceptions of CTE and its students.

The disconnect I speak of may be characterized in different ways and is emblematic of many symptoms. The crux of the problem is that many pre-service teachers don't seem to be in sync with the interests and needs of most CTE students (Zirkle, 2004; Ain, 2006; Pundt, Beiter, Dolak, 2007). This problem often manifested itself in the ways in which my pre-service teachers designed and implemented instruction. Many times, they shared with me their less-than-ambitious expectations of CTE students. The source of their hopelessness was often rooted in the disparity in interest shown by CTE students compared with other students. Unfortunately, my students seldom recognized that CTE students often had unique interests and needs.

Pre-service students' modification for their CTE students were almost exclusively explained as "slowing down" the lesson. This method of "modification" exemplified a belief that these high school students were not as cognitively capable as their non-CTE peers. In other cases, CTE students were simply dismissed as being lazy and/or disinterested.

These types of assumptions can have devastating effects in that they sometimes bleed into the teacher-student classroom relationship. Such relationship erosion frequently leads to a sense of hopelessness among both teacher and student. Hopelessness many times results in student dissonance or, even worse, student drop-out. CTE's importance lies in its potential to improve student retention, increase positive student outcomes, and its unique ability to serve as an inclusive entity for all students (Gray, 2004; Stone, Alfeld, 2004).

Exploring pre-service teachers' knowledge and beliefs about CTE is purposeful because I see them as not only raw subjects (as in newly entering the teaching profession) but also as an entry point to addressing the disconnect described above through focused educational training. As such, I pose the following research questions:

- 1) What are pre-service teachers' perceptions and attitudes about CTE programs in general?
- 2) What are pre-service teachers' perceptions and attitudes about CTE students?
- 3) What are pre-service teachers' perceptions and attitudes regarding their academic instructor roles?

Chapter 2

Review of Literature

CTE Programming

Introduction

Career and Technical Education (CTE) is a component of the public high school educational system that was formerly referred to as vocational education. Its principles can be summed up through a description by Plank, DeLuca and Estacion (2005, p. 2): “education *through* work, education *about* work and education *for* work.” CTE has always been and continues to be heavily affected by federal legislation. Federal funding of public vocational education has been in effect for over 90 years now. It began with President Woodrow Wilson signing into law the Smith-Hughes Act of 1917, which was also referred to as PL 64-347. This legislation was passed with the intention of serving those individuals who were either vested in or planning to enter a life in agriculture or farm work (U.S. Dept of Education, 2007). This original intention gives perspective to the isolation in which CTE programs have often existed, in fact, to this day, many CTE programs are housed away from the “main” campuses of comprehensive public high schools.

CTE's Beginnings

At the turn of the 20th Century, the educational landscape in U.S. high schools was purely academic and relatively exclusive. High school was a luxury not readily available to the masses. In 1890, only six percent of youth fourteen to seventeen years old were attending secondary school. In one decade those numbers rose by five points to 11 percent. That figure rose to reflect about a third of that age group by 1920, and finally, by 1930, a majority (51%) of that population was enrolled in secondary schools (Kliebard, 1995; Harris, 1963). (see Figure 2-1 below)

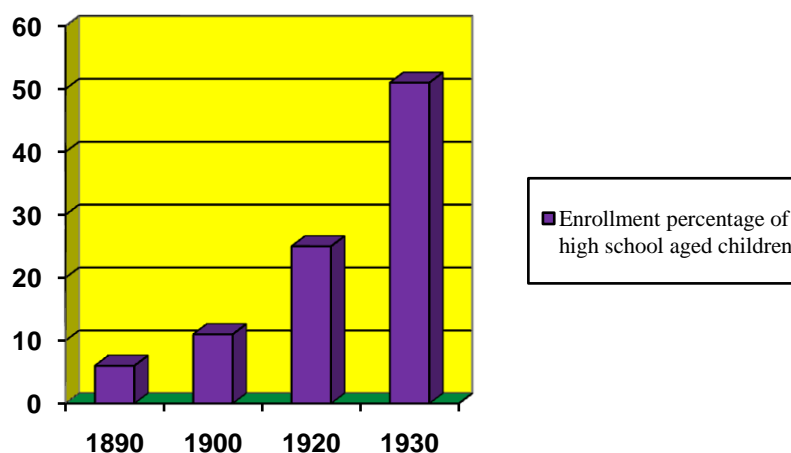


Figure 2-1: High School Enrollment Percentages (Kliebard, 1995)

Vocational education grew, in part, as a result of the expansive technological growth of the decades preceding the 20th century, an era sometimes referred to as the second industrial revolution. Its initial purpose was to provide individuals with entry-level workforce skills. As evidenced by the statement in the Department of Interior Bureau of Education's "Cardinal Principles of Secondary Education":

Vocational education should equip the individual to secure a livelihood for himself and those dependent on him, to serve society well through his vocation, to maintain the right relationships toward his fellow workers and society, and, as

far as possible, to find in that vocation his own best development.” (Department of the Interior Bureau of Education, 1918, p.7)

The major debate of the day was whether vocational education served the student or if it served society. In fact not only were its results debated, but its aims were debated. Educational leaders couldn't agree on what vocational education should be doing let alone how it should be doing it. No true consensus was ever reached in that regard.

Early conversations were framed in positions held by men such as John Dewey, W.E.B. DuBois, Booker T. Washington, David Snedden and Charles Prosser. Snedden, Prosser and Washington were among the most outspoken advocates of vocational education, and the “social efficiency” movement of the day. On the contrary, Dewey and DuBois were much more guarded about the idea. They were wary of the potential for vocational education to become a vehicle for life tracking rather than preparation for life (Kliebard, 1995). These conversations were prominent in the years that preceded PL 64-347 and for many years thereafter. In fact, these conversations, in many ways, continue to frame the discussions about and the perceptions of CTE even in its present context.

Snedden and Prosser suggested that the primary focus of vocational education should be on preparing individuals to meet the needs of the workforce. These scholars proposed that vocational education students' primary concern should not be personal gratification but service to their communities and society as a whole, and that trade skills acquisition was the optimal way to create opportunities for such service. Secondary education, as it was, could and should prepare individuals for a specific role in society (Zehr, 1999). In addition to advocating on behalf of vocational education, Snedden and his colleagues argued in favor of establishing a dual educational system. This dual configuration would consist of two separate branches of education to exist under the auspices of one public education system. In defense of this plan, Snedden extolled that there should be special educational programming for special educational interests

(Dutton and Snedden, 1916). They also dismissed the idea of vocational education being equivalent to a second-rate education. As Washington once stated (Gordon, 1999, p. 170):

One of the weakest points...is that so many get the idea that the mere filling of the head with knowledge of mathematics, the sciences, and literature means success in life. Is there not as much mental discipline in having a student think-out and put on paper a plan for a modern dairy building as having him merely commit to memory poetry that somebody else thought out years ago?

Not to be left out was the stigma on vocational education as the work of less refined individuals. In response to such positions, Washington stated: "There is as much dignity in tilling a field as in writing poetry. Learn all you can, but learn to do something, or your learning will be useless" (Gordon, 1999, p. 170).

The rival school of thought, led by John Dewey, opined that the purpose of any formal education should be to serve the needs of the individual (Rojewski, 2002). Dewey believed that society's needs would be fulfilled as a result of meeting people's needs, for they would, in turn, make substantive contributions within our democratic society (Dewey, 1916; 1944). He lamented the viewpoints of Snedden, Prosser and Washington as being a less than noble attempt at "social predestination," relegating youth to a future that was indelibly tied to the fate of their respective trade. In addition to Dewey, W.E.B. DuBois championed opposing viewpoints to those within the social efficiency camp. In response to the popular argument of the practical benefits of vocational education, DuBois warned that "Industrial schools must beware placing undue emphasis on the practical character of their work." He went on to say, "All true learning...is practical in the sense of being applicable to life" (Kliebard, 2004, p. 114).

Concerns about social predestination may well have been warranted. Charles Eliot, respected scholar and former president of Harvard University, argued for sorting elementary-aged students according to their perceived aptitude and likely educational destination (Eliot, 1908).

His position is largely what the debate was based upon. Was vocational education a venture in educational empowerment or an instrument of classism and hierarchical control? While Dewey was not opposed to vocational education per se, he found the dual system promulgated by Snedden and Prosser to be problematic. He argued that a deliberately distinct separation between academic and vocational education had a penchant for making each too narrowly focused and ultimately less useful to students (Dewey, 1916). Snedden, Prosser and other social efficiency advocates would not relent, however, and insisted that a dual system be established in an effort to not water-down vocational training through a melding with general academic instruction.

Naturally, the idea of “sorting” as early as elementary school heightened the concerns of Dewey, DuBois and those who agreed with them, but it, surprisingly, also created critics within the vocational education community. Seen as extremist, this position was even rejected by Snedden, who spoke of narrowly focused elementary education curriculum as a fundamental mistake of the worst kind (Snedden, 1908). Snedden believed that vocational studies should be undertaken exclusively in secondary school. His rationale was that among other advantages, this option was much more likely to identify those students who especially cared for vocational studies among the more mature, secondary education students.

While there was never an agreement within the educational community of how best to include vocational education within the public education system at this time, a decision was made within the nation’s political community that the U.S. would forge ahead with the views of Snedden, Prosser and Washington as frames of reference for this undertaking. Their views and the guiding principles of “social efficiency” would direct the course of vocational education for decades to come. Even today, they figure prominently into the discussions of what CTE’s goals and intended outcomes should be (Kliebard, 1999). Prosser, seen as possibly the foremost leader of vocational education at the time, went on to figure prominently in the writing of the first piece

of federal legislation that provided the funding of vocational education programs for secondary-education-aged children.

Public Law 64-347, commonly referred to as the Smith-Hughes Act, was signed in 1917. It provided federal funds in the amount of 1.7 million dollars in addition to creating the Federal Board of Vocational Education. Also, PL 64-347 mandated there be matching funds from any state government that was to receive federal dollars for vocational education. The Federal Board of Vocational Education was responsible for overseeing the distribution of these funds as well as ensuring that all states adhere to policy guidelines. Within a decade, federal appropriations would increase to 7.2 million dollars. As federal appropriations grew, so too did the government's interest in how funds were used, making the presence of the Federal Board of Vocational Education stronger. All state vocational education plans were ultimately submitted to the federal board for approval in conjunction with Smith-Hughes policy (Barlow, 1976).

In its initial form, vocational education was indeed overwhelmingly skills-laden. During those early decades vocational education students were basically trained with regard to specific skills. Due to state autonomy, there really wasn't a consensus as to how things should be set up. In some cases, high school students received vocational education only. In other cases, students engaged in a half-day regimen where they would split time between vocational and academic education. The latter reflects today's generally accepted practice.

There are many conflicting opinions of how well the early years of vocational education served the country and the many students to pass through the system. Former vocational education teacher turned curriculum historian, Herbert Kliebard, has often expressed a morose perspective regarding the earliest form of vocational education, where students were trained with intense focus placed upon skills related to a specific industrial function bereft of general education preparation (Kliebard, 1999). Still, many others expressed satisfaction with the outcomes of vocationalism. Considering the relevance of mechanical orientation at the time, a

large public constituency believed that vocationalism was extremely useful in terms of societal progress and that it certainly served as a solid and productive base of employment for many citizens (Zehr, 1999). During the 1940's, vocational education was heavily influenced by the United States' involvement in World War II. This period brought an increase in funding as well as a decided emphasis on the types of skill acquisition that would lend themselves to wartime production. This sort of training, while disproportionately geared toward a wartime industry, was in line with the routinely skill-heavy instruction that was commonplace in much of vocational public schooling at the time (Harris, 1963).

As time has changed so has the curriculum of vocational education. In the 1960's the focus of vocational education changed to be more reflective of the learners' needs, as leading educators and society at large moved in the direction of Dewey's philosophy. In addition to training individuals to contribute to the nation's workforce, vocational education leaders added a social component in the 60's. The curriculum was not simply limited to instruction related to job skills but was broadened in many respects to include a focus on workforce habits and workplace decorum. This curricular adjustment was brought to the forefront in large part due to the changing face of the vocational education student. Since the 1940's over 20 million people had moved into urban areas from rural parts of the country (Arnold, 1964). Opportunities amongst small farmers were in decline and there were adaptation issues related to entering a new environment and workforce. While these concerns were felt in urban comprehensive high-schools in general, they were met with a shift in curricular design within vocational education coursework in particular.

Specifically, this shift in vocational education was captured in the introduction of new federal legislation. The Vocational Education Act of 1963 called for state boards of vocational education to specify their use of funds in relation to current and projected job market trends. Another groundbreaking facet of this legislation was that such programs were subject to "periodic

reviews and evaluations” based on “educational standards.” This was the first example of overt academic expectations making their way into legislation that outlined outcomes expected from vocational education. As Meade and Feldman noted at the time:

...in 1965, we can no longer afford the luxury of a separate system. We can no longer afford to let vocational education programs offer a ‘lick and a promise’ of general education, any more than we can allow general education to ignore what vocational education can do to strengthen it...we must make it clear that we refer to vocational education, and not to vocational training (Meade, Feldman; 1965, p. 71).

Here we see a definitive shift in the intended outcomes of vocational education, as determined by the National Office of Education, from the “social efficiency” ideology largely put in place by scholars such as Snedden and Prosser, to an ideology more representative of the vision touted by John Dewey.

Vocational education, it was said, needed to change with the times. Despite these efforts to alter the focus of vocational education, however, nothing of substance changed. The 70’s saw little change in vocational education curriculum or structure from that of the 60’s. In fact many argued during that period that vocational education was stagnant (Arnold, 1964). Some say the supposed effort to change goals and outcomes of vocational education without having strategic plans for doing so, along with the decline in manufacturing jobs, led to the steady decline in enrollment that was to dog vocational education through the 80’s (Zehr, 1999). Statistics reflected, for example, a 13 percent decrease among high school sophomores enrolled in vocational educational courses in 1990 as opposed to 1980 (Dervarics, 1995).

While unfortunate, perhaps it was this period of decline which led to some of the most beneficial changes to vocational education that have ever been made. During the mid to late 80’s a rebirth of interest occurred among the vocational education community to intentionally change

its course. There needed to be an infusion of academic focus along with its focus on vocational “training” (Hyslop, 2007; Lewis, 2005, Zirkle, 2004). One such change was somewhat cosmetic, yet effective and quite instrumental in reshaping vocational education. It was the decision to refer to vocational education, henceforth, as *career and technical education*. The name change spoke directly to the new direction of vocational education in the U.S.

Re-Introduction

“An aim must, then, be flexible; it must be capable of alteration to meet circumstances”

John Dewey, 1916

The transition into the 90’s proved to be the ideal time to *re-introduce* vocational education to the country. The name change from vocational education to career and technical education was monumental in its attempt to reshape what imagery is conjured up at its speaking. Career and Technical Education describes the higher aspirations of vocational studies by calling attention to the high skill level that students are expected to acquire while in CTE programs. Career and technical education more aptly represents what the contemporary program is and what its intended results are: while the idea of vocational education spoke to the presumption of a job, a *career* speaks to people’s sensibilities of a livelihood and an identity. Likewise, the term *technical* speaks to the growing technological changes reflected in what is taught and learned in many CTE programs summarily dismissed as a dumping ground for the incapable. The term “career and technical education” more adequately reflects the vision and detail that is required to have a truly effective educational program in today’s high-tech society.

Aesthetic changes aside, we’ve learned from Shakespeare that “that which we call a rose by any other name would smell as sweet.” The name change was appropriate and meaningful but

still only symbolic in the grand scheme of things. This symbolic change came with legislation that helped to usher in a new way of thinking about vocational studies. The Carl D. Perkins Act of 1990 explicitly called for integration of academic and vocational content within CTE curriculum (Hyslop-Margison, 2001; Reese, 2003).

The new thrust of CTE was not only to provide students with skills with which they might attain gainful employment but also with the academic foundations that would make post-secondary education a viable option as well. However, curricular and pedagogical adjustments had to be made to effect real change. The intended outcome was to create a rigorous new program; one that did not reflect its predecessor's antiquated public image of second-class education but, instead, a new public image of valued knowledge and skills for *any and all* future citizens. With those changes in mind there was a concerted effort to include more fundamental and applied academic material within the technically-based content of CTE coursework. CTE would become a blend of applied academics, school/career/business infusion programs, and straightforward vocational programs that were highly relevant in their respective fields. This was to be achieved through an effort to skillfully integrate the ideals of education for life and education for earning a living (see Figure 2-2).

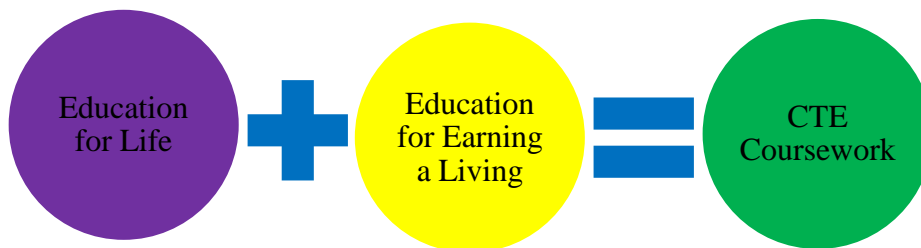


Figure 2-2: CTE Coursework

I will use culinary arts as an example. There is an abundance of math and science that can be taught within the framework of a culinary arts program. As a part of most food preparation, measurements are taken, proportions are figured, time and temperature considerations are necessary. All of these tasks require basic mathematical computations. Cooking also includes certain chemistry-related applications and the like as a part of the process. There are even social studies lessons to be learned if they are properly incorporated, given the vast number of inventors of equipment and processes that have shaped the art of cooking and the more industrial aspects of food production, preparation and management in addition to the history and cultural relevance of recipes.

Food choice, preparation, service and consumption all heavily influence cultural footprints. Much of what is eaten in North America differs from what is eaten in Africa. How food is served in Mexico differs from how it is served in Japan. The way seafood is prepared in Louisiana differs from that of Maine. Food serves as a cultural window in many respects from social mores to geographic resources. They can all be explored in an applied manner through CTE (Jones, et al, 2000). Lastly, fundamental language arts skills are fairly easy to build into any lesson with consideration given to writing exercises. In addition to reflective writing, there is an important focus on “technical” writing in CTE; that is, the skillful writing of processes and sequences within various program content areas. While I used culinary arts to exemplify the concept of academic integration into career and technical education, the principles are easily transferable and applicable across the CTE landscape (Martin, 2005; Stone, 2003).

Contemporary CTE advocates recognize that college for all is not the solution to our educational woes in the U.S.; neither is a school-tracked workforce feeder system. Decisions concerning CTE programming must surely be approached with respect given to age-appropriate implementation where these types of options are made available to those students already provided with basic academic content and instruction. One of the harshest criticisms of early

vocational education was that it was delivered as an unfiltered indoctrination into the workforce. It was, in effect, “training” rather than education, thus bringing to bear Dewey’s warnings of “social predestination” (Dewey, 1915; 1956). Such ideas have no currency in today’s CTE agenda.

CTE and High School Students

According to proponents, the importance of CTE to today’s students and the country in general is impossible to overstate. Taking into account the nation’s current dropout rates among secondary education students (over 30%) it is obvious that today’s predominately academic approach in high schools is not working for large numbers of students (Harris, Wakelyn, 2007). Considering the fact that high school drop-out rates have consistently been a dismal representation of productivity in our public school system, it is safe to say that moving all high school students through the same basic programs has never worked. Albert Einstein has been quoted as saying that “insanity is doing the same thing over and over again and expecting different results.”

For decades, the U.S. as a whole has bought into the idea that the only way to achieve true success through education is by way of an exclusively academic focus. The goal, according to those who subscribe to this school of thought, is for all students to proceed from high school to a four-year college. This seems as ridiculous as thinking that all students who do proceed in this manner will want to, or should, complete a college major in business administration. If someone proposed this, s/he would be rightly laughed out of a room. That statement is no slight toward the pursuit of business administration; rather against the notion that amid multiple options, only one should be utilized. So why is this approach touted in regards to high school education? Why do

we profess a need to offer options in one instance (i.e., college) but stifle earlier options in high school? Just as there is purpose and meaning in the diverse array of coursework and discipline within the ranks of colleges, there should be similar support for the idea of such diversity for high school students (Gray, 2004b; Morgan, 2000; Reese, 2002).

Simply stated, all students are not cut out for, nor do many *want* to pursue further academic education via four-year colleges. Unfortunately, many college students do not take a stand on these feelings until they are semesters in debt. In many instances they find themselves in this predicament as a direct result of pressure and shaky advisement from parents, teachers, administrators and guidance counselors. Until we realize that desire cannot be force-fed, many young people will continue to be driven into this corner of debt, confusion and uncertainty. Imagine how much further along many of them would be if their decisions had been guided by sincere interest as opposed to social and cultural pressures and fears of being characterized as a failure lest they choose college.

CTE and Dropping Out

As I have previously noted, over 30% of our nation's secondary education students drop out of school before graduation; eleven percent of them will drop out by the tenth grade, never to complete their formal education (Gray, 2007). The effects of dropping out of high school have very real and potentially long-lasting consequences for those who do so and for society at large. Studies have shown that dropping out often leads to a higher rate of unemployment, greater stress on the nation's public assistance system, and even an increase in criminal activity, among other things (Plank, DeLuca and Estacion, 2005).

CTE's positive impact on student retention is becoming more and more evident. Among other things, student detachment from and disinterest in the general curriculum have each proven to be consistent contributing factors in students' decisions to drop out of high school. Conversely, CTE has been found to stem, if not counter, the tide of students who decide school just "isn't for" them and drop out (Plank, 2001; Reese, 2005). A 2005 National Research Center for Career and Technical Education found that the likelihood of a student dropping out is reduced when s/he takes one CTE course for every two academic courses (Stone, et. al, 2008). Too, a Bill and Melinda Gates Foundation report indicated that 81% of students who dropped out stated that a school curriculum centered on "more real-world learning" could have prevented them from dropping out (Anonymous, 2008). Offering the afore-mentioned "real-world" type of context is exactly what CTE does best. Plank, DeLuca and Estacion (2005, p. 15) summed it up best when they stated:

(a) students may find CTE classes more interesting than academic classes; (b) some students may be more likely to see the value of CTE classes than of academic classes in preparing them for careers of interest; (c) CTE classes can clarify the value of academic classes by specifying the skills needed to succeed in careers of interest, and thereby lead students to see a greater value associated with staying in school; and (d) CTE classes may encourage some students to define career goals, and thereby keep them more engaged in school.

Considering the fact that half of all college students change their major course of study within their first two years of college and a quarter of college students transfer, it seems reasonable to think that parents, teachers and administrators would be in favor of having students spend some time within the CTE structure and framework of career exploration. Many of the aforementioned students wind up not completing their program or leaving with a degree that really will not garner the type of employment they envisioned. Greater focus and prior-knowledge would go a long way to quash the high incidence of trial and error in these post-

secondary ventures, thereby saving students and parents precious time and financial resources (Gray, 2007; Reese, 2005; Stone and Alfeld, 2004).

Presently, about a third of all public school students do not complete a K-12 education in the U.S. The dropout rate of over 30% is a telling one (roughly 32% of U.S. dropouts occur during or immediately following 9th grade), reflecting many inadequacies in our nation's high schools. (Bottoms, 2006; Plank, DeLuca, Estacion, 2005; Gray, 2007) The following (Table 2-1 and Figure 2-3) is a sample of the numbers breakdown per groups of 20 high school students in the U.S.:

Table 2-1: Student Matriculation and Outcomes (Gray, Herr, 2006)

Initial number of students	Description of student matriculation and outcomes	Remaining number of students
20	6 of the initial 20 students will drop out before graduating from high school	14
14	6 of the remaining 14 will go directly to work after graduating from high school	8
8	4 of the remaining 8 will go to college but will drop out before graduation	4
4	2 of the 4 college graduates will be not be working within their respective field and will be categorized as under-employed	2
2	Only 2 of the initial group of 20 public school students will graduate from college and be working in their respective fields	0

I doubt if any among us would consider these education results a success. With numbers such as these, we cannot continue to ignore the potential benefit CTE can offer students.

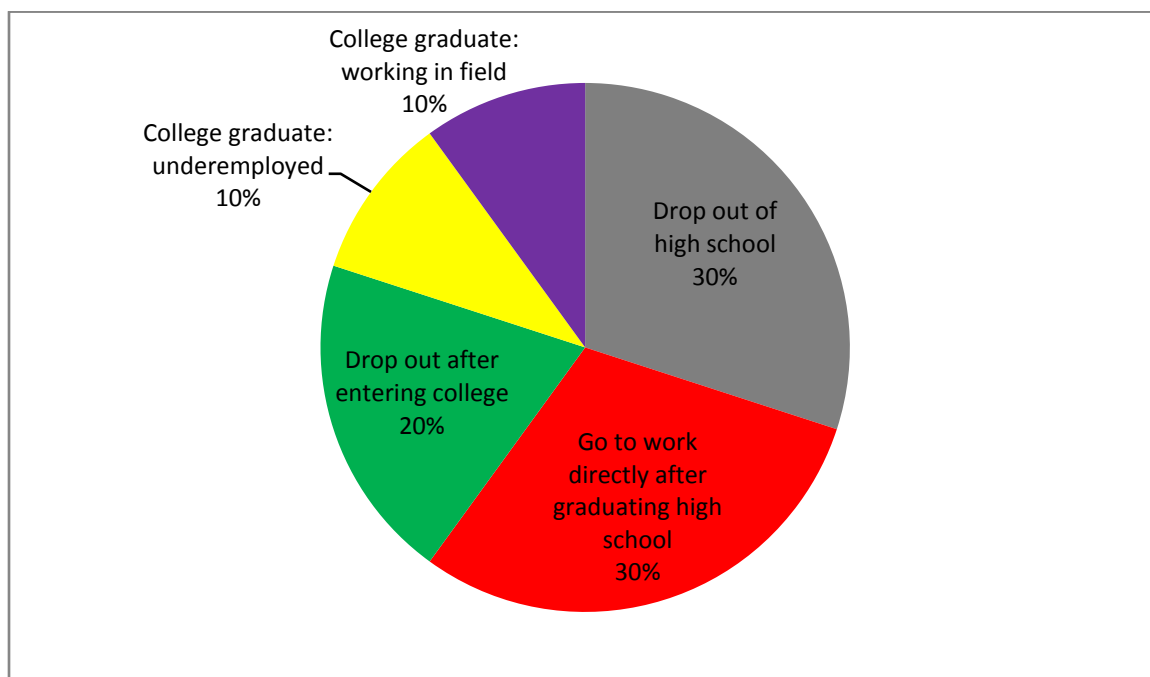


Figure 1-3: Student Matriculation and Outcomes

The C-Kid and Special Needs Populations

The C-Kid

I see two populations for whom CTE is *particularly* important. The first is a group that I refer to as the c-kids, literally the middle-of-the-road type of student whose grades hover around a ‘c’. There is nothing overly impressive about this student: he shows up at school, goes through the motions as society, parents, teachers and administrators would have him, and basically leaves at the end of the day none-the-better for his attendance. This student is described adequately as the “unspecial” kid in *The Shopping Mall High School* as the “‘invisible people,’ ‘the middle class,’ and ‘that great gray-mass area,’ those people that don’t fit into any...categories” (Powell, Farrar, Cohen, 1985, p. 174). Authors Kenneth Gray and Edwin Herr refer to this group as the

“academic middle” in *Other Ways to Win*, their status defined as being “in the second and third quartiles of their high school class...neither being academically blessed nor fitting into special education classes” (Gray, Herr, 2006 p. 4).

No matter which identifier we attach to this population, many educators and others see them as summarily and unfairly shuffled through a system that is largely responsible for preparing them for their adult lives. We allow them to matriculate through high school as spectators, content to leave them to their own devices lest they initiate counsel from us. Even through cries for help, we often times provide no such thing; rather, we usher them in the direction we believe to be pleasing to the masses. Without considering what is really best for these students, we respond with what has become some sort of cult-like mantra: “go to college.” Whether based on ignorance or pompous hierarchical allegiance to the ivory-towers of our society, we lead them to what many times is, at best, a long shot and more likely, a sure failure. This situation is unacceptable and it must be addressed.

Considering the plight of these “c-kids” begs a question related to purpose and methodology. What is the intended purpose of public education in the U.S. and how well does it function to serve that desired goal? Dr. Sydney Marland, former U.S. Commissioner of Education, once stated that “a fundamental purpose of education is to prepare people to live a productive and rewarding life” (Mori, 1980, p. 91). This is indeed a noble a worthy cause. If this is in fact our charge as educators, counselors, and administrators, I agree with Dr. Marland in his follow-up comment that “for far too many Americans, our schools are failing in this essential mission” (Mori, 1980, p. 91).

Many would argue against such an assertion, pointing to the all-time high numbers (approximately 60%) of high school graduates going on to pursue post-secondary education (National Center for Educational Statistics, 2005). While it is indeed true that students are entering college at an all-time high, there is no such positive news to report in regards to retention

or graduation. Currently there is a dropout rate of approximately 50% within U.S. colleges and universities, while over 60% of all full time undergraduates have loans to support their educational pursuits (Gray, Herr, 2006). This suggests that half of those who attend college after high school leave with nothing but debt; a very real problem that creates a definitive loser in this game of poor advisement. There is loss of not only time, but also of economic freedom that develops as a result of poor and, many times, uninformed decisions.

Special Needs Population

The second group of students who would benefit greatly from increased CTE exposure would be those labeled as “special-needs” students. As a former public school special education teacher, I have seen and been a part of special education’s unfocused curriculum that does students a dis-service and steers them in no particular direction. I remember seeing my students move through academic focused programs that certainly did not prepare them for college or provide them with skills with which they might be able to attain gainful employment. There were, of course, exceptions to the rule. Some students were identified with disabilities that did not automatically disqualify them from academic success, but a significant number of these students were not interested in or not capable of college-level work, yet were taking courses that (even if not on an elevated instructional level) were meant to promote academic exploits. I watched most of them move through high school with no real options, other than to show up and suffer through material that would not benefit them and in which they had no interest in.

Benefits of CTE Exposure

There are many benefits to exposing students to CTE programming. Among these are creating an environment that allows all students to engage in educative processes that nurture their respective talents. With proper CTE exposure, students are afforded the opportunity to examine their talents and interests in relation to a full and diverse curriculum. Such an opportunity allows for the open expression of abilities and talents, including both academic and spatially applied knowledge and skills. Additionally, these opportunities could have a positive effect on the nation's dropout rates. Also, through exposure to CTE, students can begin to make the types of connections that lead to career discernment, resulting in a positive effect on the national job market, hence the economy. Lastly, there are the positive outcomes within the high schools, themselves, by way of including all types of learners in the educative process. This inclusive practice establishes a healthy climate within the school and by extension, the community (Gordon, 1999; Gray and Herr, 2006; Mori, 1980; Powell and Farrar and Cohen, 1985).

As stated earlier, CTE is all about options. It presents options that greatly aid students in deciding what they want to do with their lives. Recently, high school students have not been making these types of decisions; rather, these decisions are being made for them, whether directly or indirectly. Perhaps it is best summed up by Shepard Siegel in a 2004 article in *Techniques*, a magazine that is published by The Association for Career and Technical Education:

The fact that school leaders promulgate the myth and tell parents that all students will complete a college education is wrong, and it is a lie. The truth is that about 25% of our high school graduates complete a four-year college degree, and there is nothing wrong with that. But if the average age in our community colleges is about 30, that means that they are filled with adults who bought into that lie and are there after striking out at the false altar of universal baccalaureate-based professionalism. The fact that a technical career or one in the apprenticed trades is intellectually challenging, well paid, meaningful and satisfying, but is perceived as the path of an academic failure--is wrong. There is a magnificent ignorance whereby elitists hide an archaic prejudice against CTE behind the

smoke of high school reform. That a student might prepare for industry certification and a career that challenges their kinesthetic, spatial, mathematical or interpersonal intelligence and provides meaningfulness and gainful employment, is somehow distasteful to those who consider any pathway other than baccalaureate as less than and a failure (Siegel, 2004, p. 61).

In addition, research at Johns Hopkins University has shown that integrating CTE and academic course work can in fact increase academic achievement (Plank, 2001). The study, where 25,000 eighth graders were followed for six years, also showed that the lowest dropout rates occurred when students took three CTE units for every four academic units, and that taking CTE coursework did not negatively affect the chances of a high school student getting into college.

CTE and student choices

As with most human beings, serving as an active as opposed to a silent participant bodes well for incentive. In line with that perspective, the ability for students to be engaged in curricular decisions establishes a level of interest and investment that goes missing in many instances. Currently, we are not effectively giving high school students the types of varied options that we should and are, in fact, able to give them. Options are “diversified” within a limited arena, and that arena is academic-oriented instruction. There are a myriad of options in that regard and students are steadily led in that direction. Meanwhile, CTE programming and the potential it represents, frequently, goes largely ignored with the exception of those students who initiate that participation themselves or are recommended by high school counselors or academic education teachers who, many times, are motivated by removing those students from their classes. While not always the case, this is certainly a scenario all-too familiar to students and proponents of CTE (Bernard, 2007; Gray, 2004a; Stewart, 2006).

CTE and Career Exploration & Identification

“America still has way too many parents and students reflexively applying to four-year colleges on the old adage that in the long run, that is how to get to the top. Many more (students) have been going to college without really knowing why and finding out they don’t acquire the skills they need to get a job.” –Peg Hendershot, director of Career Vision, a Chicago-based career consulting service (Wood, 2006, p. 1).

Career and Technical Education not only serves as a means to fight the nation’s dropout epidemic but also as a means to introduce students to the concept of career exploration. This is, perhaps, one of the most under-appreciated aspects of CTE. Exposure to career options provides high school students with the invaluable experience of identifying interests and, beyond that, identifying what skills are needed and how they stack up in regards to said skills. This experience is unique to CTE and is not something that traditional academic instruction provides (Balassonne, 2006; Carter and Cumming, 1999; Wood, 2006).

Many in the CTE community believe that in addition to a greater understanding of possibilities, career exploration serves as an impetus for greater purpose for its students (Francis, Herren, 1995). This point was well noted by Caroline Stuke, guidance counselor at the H.B. Ward Technical and Academic Center in Riverhead when she stated, “I worked in conventional high schools, and our kids in the technical schools are so much more focused. They really have a passion for what they are doing” (Stewart, 2006, p. 14).

What then is the problem? Is it that our intentions as a society are not truly what we profess them to be regarding the purpose of public high school education? Is it, as some claim, that kids just don’t care anymore? Or is it a flawed methodology? Is the problem inherent in the very way we approach achieving our communal goal of preparing students? I suggest that it is most certainly the latter. The problem, in large part, is due to our collective failure to explore all

options whole-heartedly. As a society we continue to exhibit indifferent commitment to presenting our kids with opportunities to be successful and providing diverse instruction while in truth, we hold tight to archaic beliefs about CTE in spite of its offering a wealth of opportunity for students. These beliefs are largely rooted in ignorance at best and inferiority and superiority complexes at worst. Throughout the years (arguably since its inception) there has been a stigma placed on the idea of vocational or career and technical education. Career and technical education enrollment is widely thought of as an indictment of one's abilities. This (mis)characterization is directly traceable to the ideology of decades past and does not acknowledge the substantive changes within CTE (Carter and Cumming, 1999; Wood, 2006).

Instructor Roles

Introduction

As it relates to instructor roles, this study employed a framework of basic *curriculum* and *instruction* principles, based largely upon the work of noted scholar Ralph Tyler. As such, I sought to investigate respondents' perceptions with relation to CTE *curriculum* and assessment efforts and to what extent they, as soon-to-be academic *instructors*, were familiar with these efforts. Participants were also asked questions that sought information about how they perceived the integration of CTE and academic *curriculum* program ideas. Within this section, I will not only explore efforts related to CTE and academic curriculum integration, but I will also outline some of the leading models of CTE curriculum design assessment and how they incorporate academic principles.

Academic Integration Within CTE

Generally, standard practice within the profession of education is to develop curriculum with objectives in mind. As Tyler stated in his seminal work, *Basic Principles of Curriculum and Instruction*, “educational objectives become the criteria by which materials are selected, content is outlined, instructional procedures are developed and tests and examinations are prepared” (1949, p. 3). As stated earlier, CTE is certainly expected to demonstrate a substantial amount of academic integration as proof that it is pursuing a comprehensive educational experience. Moreover, CTE’s federal funding hangs in the balance based on its ability to demonstrate proficiency at academic integration. The basic purpose of CTE and academic integration is for students to demonstrate, through applied skills, an understanding of both academic content and vocational principles and the relationships between the two (see Figure 2-4) (Zirkle, 2004).

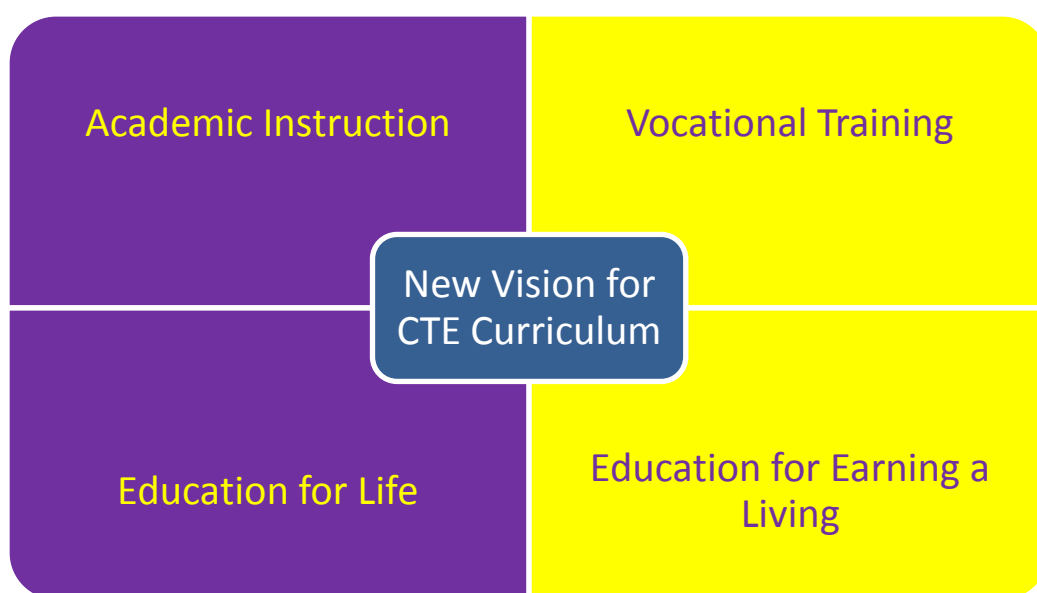


Figure 2-4: New Vision for CTE Curriculum

An integrated approach to CTE curriculum also defies the logic that suggests CTE and academic instruction must be thought about as polar opposites. In fact, when done effectively,

this approach serves to strengthen both CTE and academic content. This sentiment was echoed by Edison Jackson, President of Medgar Evers College (Dervarics, 1995) article, when he stated that “Technical programs are extremely important...[but] it’s not an either or situation. There has to be continuity between the two [academic and technical] to help students learn” (p.18). It has also been argued by many CTE proponents that each can serve to drive instruction within the other if the academic community and CTE community work together. This vision would be quite effective and beneficial for students if, as Zirkle notes, “CTE teachers realize the significant amount of academic knowledge and skills ‘embedded’ in their technical content, while providing academic teachers with real-life, problem-based activities where students can apply academics in relevant ways” (Zirkle, 2004, p. 24).

Integrated Models of CTE Instruction

Mindful of the new vision of CTE as a balanced combination of academic rigor and career and technical education, I next discuss the means by which this integration is currently achieved. Toward that end, several of the leading examples of CTE instruction and assessment practices will be detailed.

Curriculum Vantage Points

Curriculum design is generally approached from one of three vantage points: student-centered, content-centered, or society-centered (Walker, Soltis, 2004). Each vantage point has its proponents and supporting arguments. Student-centered advocates seek to devise curriculum based on matters that are central to the learner. What is s/he interested in? What is of relevance

to the learner in all aspects of life, not just the school? What does s/he *want* to learn? Chief among student-centered curriculum theorists are Dewey and DuBois. DuBois, in defense of the ideals of student-centered curriculum once stated: “The ideals of Education, whether men are taught to teach or to plow, to weave or to write must not be allowed to sink to sordid utilitarianism. Education must keep broad ideals before it, and never forget that it is dealing with Souls and not with Dollars” (Kliebard, 2004, p. 114).

Content-centered proponents shape curriculum around bodies of knowledge. What knowledge is essential to the advancement of the learner? They may focus on curriculum on a large scale: student x should know a, b and c at this point in her/his academic career. An example of the content-driven curriculum vantage point is the work of The Committee of Ten, whose curricular decisions were made based on the core academic subjects and with the goal of college preparation. The committee largely concerned itself with prescribing a standard curriculum based on expected performance according to subject, age and grade (Bruner 1960; Walker, Soltis 2004). Content-centered curriculum often uses benchmarks according to age and grade-level as measuring sticks for achievement and success.

Society-centered proponents believe that the greater society should be at the center of all curricular decisions as it is to society that students must ultimately make a contribution. These individuals are focused on societal developments and projections, such as social justice, technological advancement, and labor market trends and what roles need to be filled within that scope (Walker and Soltis, 2004; Wirth, 1983). The social efficiency movement that so prominently shaped CTE (and vocational education originally) is perhaps the best and most relevant example of a society-based vantage point. This position is summed up in the understanding that it often made industrial market trends the main, if not only, factor in curriculum develop decisions (Kliebard, 1995).

Not everyone subscribes exclusively to any one school of thought or vantage point in regards to curriculum design. Some sway back and forth depending on what the curriculum is being designed for. Some blend two or more of the positions together and implement a hybridization of approaches (Wiggins, McTighe, 1998). These hybrid ideas are particularly relevant to the CTE community because in some ways, CTE is positioned within each simultaneously. Since its official adoption, a struggle has existed in the vocational education community between advocates of student-centered instruction and society-centered instruction, but within the past two decades, advocates of content-centered instruction have passionately joined the fray; and over the last eight years or so, this contingent has not only had a loud voice but direct influence over federal funding by way of *No Child Left Behind* legislation. The proponents of this legislation made clear their less-than-impressed outlook toward CTE and threatened to retract vital funding if academic standards were not satisfactorily included within CTE programming (Lewis, 2005; Olson, 2006).

Curriculum and Instruction Designs

With curriculum design in general, there are many critical decisions to be made. Perhaps the most important aspect of curriculum design in career and technical education is determining what content is most relevant based on the current and projected job market. Other factors to be considered are time allotment and fund allocation; federal, state and local requirements (performance based, safety, etc.); industry performance/skill expectations; enrollment, recruitment and retention issues; and last but not least, proper balance of academic and vocational instruction. These factors all loom large in the process of CTE curriculum design

(Napoleon, Freedman, Seetharaman, Sharma, 2006; Plice, Reinig, 2007). There are many methods to content selection, however, each with its own strengths and weaknesses.

Introspection Process

One method that is used due its relatively simple approach is the “introspection process.” Introspection is much as it sounds. Instructors rely heavily on their own personal experiences in the field to determine what aspects of their respective program are most important. This process can be utilized individually or as a team. The advantage to employing a team approach is that various perspectives can be effective at covering a wide range of content issues, filling in gaps that might have existed had there been only one person going through the process. Another positive aspect of group introspection is that it helps to eliminate individual bias. Sometimes, in addition to the team concept, an advisory board is utilized in determining how curriculum should be constructed. Members of an advisory committee typically have a much more hands-on relationship with the content area, which gives them a fresh perspective with which to make suggestions (Finch, Crunkilton 1999). The term “hands-on” as used here, and throughout this study, refers to the demonstration of knowledge acquisition and content (including academics) mastery through applied work (Lewis, 2005; Napoleon, et al, 2006; Zirkle, 2004).

The DACUM Model

The DACUM (Developing A CurriculUM) model was developed in the 1980’s and is similar to introspection except that this process is shaped around the input of SME’s (subject matter experts). This is one of the huge benefits of the DACUM model. SME’s have not only a

broad range of understanding of the content area but, due to their active professional status, their suggestions are offered from a perspective that is as current as possible. This currency is not always the case with classroom instructors who are not quite as active in the field. DACUM is also preferred among many because it is an inexpensive approach that is thorough yet can be completed quickly (National Center for Research in Vocational Education, 1983).

Task Analysis

Another tested design strategy is that of Task Analysis. Task analysis is a process that involves identifying and dissecting jobs based on the progression of tasks that are necessary to fulfill the job expectations effectively. It has proven to be a successful method of developing CTE curriculum for many decades. A task analysis is broken down into sequential steps that, when completed, comprise a body of information that can be used to appropriately design curriculum for any content area. The steps include completing an in-depth literature review, developing an occupational inventory, selecting a worker sample, administering the inventory, and analyzing the collected data collected. The process in totality is thorough but can be quite lengthy. To help with this daunting process, data banks have been created by national organizations that provide information for countless job titles. One weakness of this system is that it can be slow to conduct if done so without national data bank information, yet with national data bank info, localization of task information is lost (Finch, Crunkilton, 1999).

The Critical Incident Technique

This approach is typically better used as a supplemental curriculum tool rather than as something which itself leads to a comprehensive plan of instruction. Nonetheless, the critical incident technique can result in extremely useful information for learners and instructors alike. It is predicated on the desire of a curriculum designer to understand significant factors that lead to pivotal events or important decisions in the workplace. The process involves constructing a questionnaire or “incident” form that explicitly states what information is desired. To be truly effective, a substantial number of “incident” forms (at least 100 - 200) are distributed to supervisors. Completed as they go about their daily work, they record answers based on their interactions with subordinate employees. Data are collected, compiled, and interpreted as a composite representation of workplace conduct (Finch, Crunkilton, 1999).

The Delphi Technique

This approach consists of four rounds of mailed questionnaires and an intense analysis and modification phase in between each round. Participants and curriculum designers never meet face to face when properly implementing the Delphi Technique. Anonymity is central to the process as it allows for complete freedom and honesty on behalf of the respondents. The initial questionnaire asks SME’s to list what content they think is vital to designing a thorough curriculum for a given subject matter. The second questionnaire is sent to all participants with a listing of all SME suggestions and a request that they rate each suggestion in terms of importance. The third round asks participants to review others’ ratings and revise their own ratings, based on other responses, if so inclined. The fourth round is basically a chance for respondents to view

one final time, the rankings of importance by their peers and to make any revisions to their own suggestions/rankings. This process is intense, detailed, and lengthy. Perhaps most challenging about this approach is that it requires a substantial commitment from participants (Finch, Crunkilton 1999, 1993; McMahon, 1972).

Industrial Focus & Correspondence Initiatives

Yet another influence on CTE curriculum design is the relationship it has with industry and business entities, specifically tech-prep education, youth apprenticeships, and career academies. Tech-prep education programs typically begin in the junior year for students. The general aim of tech-prep education is to result in the completion of an associate's degree. These programs thrive by way of strong partnerships between schools and local community colleges. They are designed to provide a seamless transition from secondary school to associate degree programs and also frequently referred to as 2+2 programs, a play on the two final years of high school and the two years of post-secondary school that they span. Tech prep is an excellent way to provide students with the kind of skills and credentials to be successful and to build promising futures for themselves (Reese, 2007).

Youth apprenticeship programs are designed to facilitate students' transition from high school to the workforce through work experiences gained while students are still in high school. These programs foster school-business-community relationships and provide students "real-world" experience that gives them ways and means of conceptualizing themselves in the workplace. Students are able to learn workplace decorum, in addition to exploring their own capabilities in various careers (Dervarics, 1995).

Career academies are programs that seek to engage students in a very direct way to some specific career experience. These programs represent the most intense amalgamation of career

prep and applied academics that is possible for students. They range from health services to the hospitality industry, cosmetology, culinary arts, the transportation industry and more (Anonymous, 2006).

Curriculum and Instruction Designs and Academic Integration

Within the aforementioned curriculum and instruction designs are several opportunities for academic integration. One of the key positives regarding academic integration within the introspection process model is that instructors can select personal scenarios that can easily accommodate academic instruction given the personal ownership of the content. This model lends itself to CTE and academic cohesion during the development process, rather than having to alter content later. Additionally, when using an advisory committee, academic instructors can easily become a part of the process in a meaningful and influential way. The DACUM model and the Delphi technique both allow for academic integration much in the same way as the introspection process but without as much initial influence over what content is chosen. However, the same principles are applicable after the process of content selection is complete.

The task analysis model lends itself well to academic instruction given its process orientation nature. It works well as a method of instruction for large project-based activities particularly and it has obvious components of research, writing, and higher order thinking skills. This method of instruction is also quite adept at teaching organization skills and teamwork when used within a group concept. Finally, task analysis lends itself well to oral presentation as its foundation in project based instruction can be extended to include an oral presentation. Task analysis is ripe with academic infusion opportunities and can be adapted to most academic content quite easily. Finally, while task analysis exemplifies how far reaching CTE curriculum

and instruction can be regarding academic integration, the critical incident model is better equipped to serve as a supplemental tool than as a stand-alone resource. It can, however, still be useful, especially as a tool of academic assessment construction.

Industrial focused and correspondence initiative models are completely diverse in how they integrate academic content. As they are typically steeped in CTE principles in an intense form, they offer very real-world based experiences with which to contextualize academic content. While real-world application is a founding principle of CTE instruction, these models extend the concept beyond the class laboratory to the actual “real-world,” including partnerships with local businesses. Instructors therefore can frame CTE and academic content within these vocational immersion experiences. Given the varied experiences, different focus areas lend themselves to academic integration in varied ways and at varied levels of intensity. An example would be students within a youth apprenticeship program focused on construction. Within such an experience are opportunities to include the applied mathematics necessary to compute zoning and structural measurements with the technical writing that is vital to developing blueprint plans. Scientific and social studies components can be offered through exploring the relevance of proper structural weatherizing accommodations and what these considerations mean environmentally and socially.

Integrated Models of CTE Assessment

Functions of Assessment

Assessment is widely regarded as a means of determining the achievement of content mastery. While this assertion would be true, it would also be a very narrow definition of

assessment. Assessment is and does much more than determine content mastery. For the purpose of this research, assessment will be thought of not as purely dealing with how well students learn but also with how well CTE goals match its curriculum. Assessment in this regard is directly tied to curriculum design, program goals, and intended outcomes. As Ralph Tyler wrote, “The process of evaluation begins with the objectives of the educational program” (Tyler, 1949, p. 110). If goals and assessment are not aligned, curriculum and the entire educative process typically aren’t as thorough as they would be otherwise. How else does one determine, effectively, if goals are being met, if intended outcomes are achieved, or if curriculum is properly designed in relation to said goals and intended outcomes?

Additionally, assessment can be used to inform practice. It is not nearly enough to utilize assessment as a tool of passive information. That is, assessment merely used exclusively as a measurement tool is to under-appreciate its value. Within assessment data are possible explanations of phenomena and ways of understanding events -- the difference between simply knowing “x” and knowing why “x” is what it is. Moreover, curriculum can benefit greatly from adjustment and reformation efforts based on assessment data. Adjustment informed by assessment data analysis extends the benefits of assessment from knowing “what,” to knowing “why,” to ultimately knowing “how.” The “how” in this progression represents corrective or improvement measures and becomes the direct link back to goals and outcomes. When a designer knows *what* is taking place and *why* it has taken place, knowing how to improve goals and outcomes because a much more lucid endeavor (Littky, 2004; Tyler, 1949).

Assessment Strategies

Many of the basic types of assessment that are utilized in academic classes are also utilized in CTE classes, especially in the modern era of academic and vocational integration. CTE students have commonly been given examinations based on *selected-response* methods. Selected-response assessment is a method of inquiry that requires that an answer be selected from a set of provided options. The most common examples of selected-response assessment are multiple choice, true-false, matching and word bank tests. As previously noted, however, CTE is uniquely positioned to step outside of such conventional methods (Bott, 1996). CTE's ability to implement traditional forms of assessment is supplemented by its ability to assess students through alternative measures as well. Toward that desired end, CTE commonly uses *constructed-response* assessment as a supplement to the aforementioned selected-response assessment. Constructed-response assessment requires students to formulate their own answer to a question, prompt or directive. Central to the process is the fact that neither question nor answer need be written down. Selected-response and constructed-response methods can also be used in tandem to measure understanding of the same concept. For example, an electrical trades student might be tested on safety knowledge through a "matching" test and later be assessed on those same skills while wiring an appliance component in the laboratory.

It is imperative within CTE to use a cross-section of testing methods in order to accomplish the full range of goals as determined by both the federal government and the CTE community at large. These goals of maintaining the integrity of career and technical training while infusing academic knowledge and skills can only be attained through mixed assessment methods. The essay question, for example, must be given its just due, even in consideration of the ultimate goal of applied task completion (Finch and Crunkilton, 1999, 1993; McMahan, 1972).

Alternate Assessment Strategies Within CTE

According to research sponsored by the Office of Vocational and Adult Education (U.S. Department of Education), and published by the National Center for Research in Vocational Education (1997), there are currently four major types of alternative assessment utilized in CTE. Naturally, they are all of the constructed-response variety. The overwhelming interest in alternative assessment in CTE is rooted in the desire to improve student outcomes by measuring ability in ways that demonstrate a comprehensive understanding of concepts. This goal can be achieved through alternate assessment, as students display both theoretical and applied understandings (Nitko, 2004)

Written Assessments

While written assessment can surely be comprised of standard inquiry, true-false, matching, etc., there are ample opportunities here for instructors to implement alternative measures as well - and CTE does so often. Among the alternative written assessment methods are two types, as identified by Rahn et al. (1995), that are geared toward assessment of knowledge and ability. The first is the open-ended question. This particular method generally requires students to respond with a short answer. It typically is not employed in an attempt to elicit in-depth insight, but rather to demonstrate awareness of fundamental content knowledge.

The second type of alternative written assessment is essay questioning. As opposed to open-ended inquiry, essays questions are often designed to generate more substantive feedback. The questions are typically thoughtful, complex and constructed around real-world experiences (many times from the instructor) that call on students to apply content related knowledge and

understanding. This type of assessment not only addresses the desire for students to demonstrate complex CTE-related understandings but also reflects the commitment of CTE to infusing academic understandings into the curriculum.

Performance Tasks

Performance tasks are probably the oldest and most consistently used form of alternative assessment in CTE. These applied activities that get to the crux of how well a learner can complete a given task have always been popular forms of CTE assessment because they simulate circumstances and events that students would likely encounter as actual practitioners in a respective occupation field. An example might be for an HVAC (heating, ventilation, and air conditioning) student to complete the task of assessing repair needs and completing repair work on an inoperable or malfunctioning air-conditioning unit. While type of assessment is pretty straightforward in determining one's ability to complete tasks, there are other factors to be considered such as students' grasp of safety measures, and their ability to work efficiently and appropriately. Performing tasks represent the equivalent of a math instructor focusing on the correct answer as well as the process by which that correct answer was reached (Stecher, Rahn, Ruby, Alt, and Robyn, 1997).

Senior Projects

This form of assessment is a collective effort that represents work done over a period of time, whereas the aforementioned forms of assessment are completed in response to an immediate query or directive. Senior projects may be the most integrated effort of the four discussed here,

their comprehensive nature spans CTE and, in a best-case scenario, would include participation of outside instructors across multiple courses. Senior projects have three parts which are all essential to the proper completion of the project: a research paper, a product, and an oral presentation (Stecher, Rahn, Ruby, Alt, and Robyn, 1997).

An example might be a culinary arts student doing a research paper on Creole cuisine, preparing a pot of Gumbo, and giving an oral presentation on her/his research on Gumbo as a Creole dish as well as the process of preparing the meal. In its sum, that project would require an expansive research component, incorporating cultural studies, language arts and composition skills. The preparation of the meal would exhibit content/technology mastery, understanding of basic mathematical and scientific principles, and safety knowledge. Lastly, the presentation would integrate organization and public speaking skills and possibly technology infusion. Senior projects are all-inclusive efforts that illustrate the true range of current day CTE curriculum.

Portfolios

Like senior projects, portfolios are comprehensive, physical representations of student work. They are generally employed as two-part endeavors: the actual portfolio and its presentation. The portfolio itself is a product that includes various artifacts that document student performance in a given content area. Artifacts may include, but are not limited to, tests, student generated work, journals, recommendation letters, resumes, and journals. At the end of a term, a semester, or an academic year, students have a product that represents what they have learned in that course. As a part of the cumulative effort, after the portfolio has been constructed, students give oral presentations about their portfolio content and the process of assembling it. Portfolios typically are generated with one or more of three different purposes in mind: a) they may reflect a

student's best work; b) they may reflect a student's growth within his/her content area; and/or c) they may reflect a comprehensive body of student work (Stecher, Rahn, Ruby, Alt, and Robyn, 1997).

CTE Assessment Strategies and Academic Integration

Each of the alternative assessments listed above incorporates multiple forms and features with which to measure student performance in the service of academic and CTE integration. Based on such evidence, it is prudent to say contemporary CTE assessment options cover a vast array of learning performances. These examples reflect CTE's commitment to prepare students for multiple pursuits through the use of multi-faceted instruction and assessment. Given the subjective nature of many of the components, scoring rubrics are critical to effective use of alternative assessment in CTE (Bott, 1996; Stecher and Hanser, 1993; Stecher, et al. 1997).

As reflected in the sections above, there is a decided consistency with which CTE instruction and assessment incorporate academic intentions, indicating the immense progress made over the last two decades to fully integrate academics within CTE programs. Particularly noteworthy is that each example of instruction and assessment in allow for seamless academic inclusion, devoid of forced or laborious efforts. Together, they serve as tangible evidence of the new vision of CTE as illustrated in Figure 2-3.

Conclusion

It is not uncommon to hear students lament and belabor the place of academic content in the "real" world. Exposure to CTE goes a long way in demonstrating the practicality of academic

learning and keeps many students from losing interest in and dropping out of school (Plank and DeLuca and Estacion 2005). As noted by CTE school director Kevin Hart, “Teaching academics in an applied way just makes sense. Students never question if this will be on the test, because they see the relationship between the academic principle and its application and understand its importance” (Reese, 2007, p. 18)

At the same time, some think that taking CTE courses precludes students from the pursuit of a four-year college degree. This fixation on “college-prep” courses is a flawed mentality and must be challenged. Students, parents and counselors should realize that CTE participation doesn’t hinder post-secondary success. In fact, research shows that the career exploration opportunities provided within CTE lead to better choices in regards to post-secondary pursuits. In this respect it will be vital for academic teachers and CTE teachers to work together to serve all students (Hyslop, 2007; Lewis, 2003).

One of the best examples of CTE teachers and academic teachers working together is apparent within the “push-in” model. This model is being tried in several schools across the nation in an attempt to maximize the potential for cooperative work between CTE and academic instructors. “Push-in” instruction describes academic teachers who deliver academic content on-site to CTE students, where their lessons are developed collaboratively with a CTE instructor. The academic teacher presents material while the CTE instructor looks on, then the CTE instructor takes over, carrying out her/his usual instruction with the material explicitly aligned with the academic content that was just introduced. Whether this model catches on or not is a story to be told at a later time. What is presently obvious, however, is that the model is groundbreaking and a wonderful example of CTE and academic integration (Pundt and Beiter and Dolak, 2007; Stickel, 2005). If nothing else, it represents an earnest attempt on the parts of both, the CTE and academic community to work together for the common cause of student success.

Literature suggests that CTE has changed tremendously since its predecessor, vocational education, was adopted as an official component of public education in the U.S. in 1917. CTE has been readily and successfully transformed from being overly skilled laden, to being a legitimate, hybrid model of educational opportunity for high school students (Wood, 2006). However, literature also indicates that much of the public *perception* of CTE has failed to change along with CTE itself. A significant portion of the public, literature suggests, still has an antiquated perception of CTE, much to the detriment of the CTE community, and more importantly, of CTE students and students who could benefit from CTE exposure (Lewis, 2000; Gray, 2004b). As an educator who, just a few years ago, did not know much of anything about CTE and what it could offer students, this research is an attempt to bring CTE into the consciousness of individuals like myself. Ultimately, through this process, I hope contribute to the body of literature that seeks to inform the public of the favorable possibilities of career and technical education.

More specifically, I hope to have new and veteran high school teachers of academic subjects consider ways in which their roles and responsibilities can be extended with relative ease to help ensure the success of contemporary CTE programming and, more importantly, those CTE students with whom they interact on a daily basis. In the following chapter I outline a study intended to set the stage for this particular goal.

CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to investigate pre-service teachers' perceptions and attitudes toward career and technical education (CTE). This investigation was framed around three categories that would ultimately drive the research questions. The first category to be investigated focused on career and technical education *programs* in a general sense. As it relates to this study, "general" questioning covers diverse topics, ranging from CTE funding and the qualifications of CTE instructors, to if and how CTE affects the nation's high school drop-out rate. The second category focused on *students* who are enrolled in career and technical education classes. The focus on students is all about who pre-service teachers think *CTE students* are, their interests, expectations and abilities, etc. The third and final category of investigation centered on the *role of academic instructors* (such as the questionnaire participants) in relation to career and technical education. The point within this section was to identify how pre-service teachers perceive their professional relationship to CTE as academic instructors. Should there be considerations for CTE in their teacher training program and professional development exploits? Should they be mindful of CTE during their own planning and instruction? These lines of questioning across the three designated categories were geared toward establishing an overall understanding of the perceptions and attitudes of study participants.

Within this chapter, the basic design and methods of this research will be detailed. A profile of the participants and their selection is included, and details about the research instrument are presented, including how it was constructed and the rationale for its design. In addition, the research instrument is broken down and discussed section by section. Lastly, questionnaire administration is recounted.

Participants

The population in this study included students enrolled in CI 412W during the fall 2008 semester at The Pennsylvania State University at University Park. These 125 students represent five teacher certification groups: social studies, English/language arts, mathematics, science, and world languages. All expected to be certified to teach in grades 7-12 (except world language teachers, who can teach students from kindergarten through grade 12), and virtually all were on schedule to graduate and receive their teaching certificates in May 2009. Participants were selected based upon their enrollment status as active pre-student teachers. This criterion was established in an effort to solicit information from a pool of individuals with fresh experience in classrooms. In accordance with this objective, data collection immediately followed the completion of their pre-student teaching duties, which included nine weeks assigned to mentors and teaching in various high and junior high schools, throughout central Pennsylvania. Typically, this experience occurs during the semester that precedes a full semester of student teaching. Finally, this was a “convenience sample,” given my ready access to study participants. I served as the instructor of section 003, of CI 412W at the time of data collection. While my section made up only one-fourth of the total enrollment of CI 412W, there were times when all sections

met as one. I served, along with three colleagues, as co-instructor for this larger group, which ultimately served as the pool of eligible participants.

My final sample consisted of 104 of the 125 eligible course participants (83%). Participation was completely voluntary. Students were both male and female and encompassed a diverse population. The assorted representation of participant demographics figured prominently into my data analysis and will be explained later in this section and explored in greater detail in Chapters 4 and 5.

Questionnaire Development

After extensive review of particular studies that addressed pre-service teachers' attitudes and perceptions in general (finding none that focused on CTE in particular), I decided, along with my advisor and other committee members, to construct an original questionnaire. While published research efforts did not offer an instrument that personified the essence of this study, their instrumentation did provide me with general principles and ideas that were helpful in the process of instrument development. Several, including the work of Alenezi (2005) and Kesten (2006), gave me valuable insight into basic methods of successful questionnaire design, such as being consistent in use of language, being as clear and concise as possible, and not leading participants with my questions.

During the instrument construction phase, I tried to remain mindful of the study's three research questions. They are:

- 1) What are pre-service teachers' perceptions and attitudes about CTE *programs* in general?
- 2) What are pre-service teachers' perceptions and attitudes about CTE *students*?

3) What are pre-service teachers' perceptions and attitudes regarding their academic *instructor roles*?

All questionnaire items were selected according to one or more direct connections with related literature regarding CTE, issues with comprehensive high schools (funding, drop-out rates, etc.), and teacher perceptions and attitudes. The instrument was designed to align with the three research questions and is segmented as such (see Appendix A). In total, the questionnaire has four sections. Section one contains a set of demographic questions consisting mainly of multiple choice items but also including a few forced-choice questions (e.g., gender, age). Sections two through four contains questions that were directly tied to the three aforementioned research questions. These sections uniformly began with five-point Likert scaled items and end with a multiple choice question. It is important to note that reverse coding was used for all Likert scale items that were negatively worded. Each section will be presented in detail in the following tables and accompanying discussion.

Questionnaire Items

Demographic Information

Figure 3-1 represents items one through eight (demographic information) in the questionnaire. The selection of demographic items was done with the intent of using them as isolation factors for analysis purposes. For instance, how might gender affect one's perception of CTE programs, or how might one's age affect their perception of CTE students?

Part One: Demographic Information

Direction: Please provide demographic information by answering the following questions.

1) Male _____ Female _____

2) Age _____

3) I would describe my hometown as (please select **one** of the following).

a. _____ Urban
b. _____ Suburban
c. _____ Rural
d. _____ Other (please specify) _____

4) I would describe my family's socio-economic background as (please select **one** of the following).

a. _____ Upper-class
b. _____ Middle-class
c. _____ Lower-class
d. _____ Other (please specify) _____

5) I would describe my high school as (please select **one** of the following).

a. _____ Comprehensive public
b. _____ Private
c. _____ Focused Charter or Magnet
d. _____ Other (please specify) _____

6) The number of students in my high school graduating class was _____. (estimate if necessary)

7) I would describe my standing within my high school graduating class as (please select **one** of the following).

a. _____ Top quartile
b. _____ Second quartile
c. _____ Third quartile
d. _____ Bottom quartile

8) I would describe my teaching certification area as (please select **one** of the following).

a. _____ Social Studies (SSED)
b. _____ Science (SCIED)
c. _____ Math (MTHED)
d. _____ English (LLED)
e. _____ World Language (WLED)
f. _____ Other (please specify) _____

Figure 3-1: Demographic Information

CTE Programs

Figure 3-2 represents items nine through 19 in the questionnaire and focuses on pre-service teachers' perceptions of CTE *programs*. The research question that accompanies this section is: "What are pre-service teachers' perceptions and attitudes about CTE in general?"

Items pertaining to this question focus on the following areas of interest:

- Will they recognize that such programs exist to serve ALL high school students?
- What do they think such programs profess to accomplish?
- How do they perceive the place of such programs within the concept of a "comprehensive high school"?
- How do they perceive such programs functioning within their high school's district?

Part Two: Pre-service Teachers' Understanding of CTE Programs					
Directions: The purpose of this survey is to gather your thoughts about <u>career and technical education (CTE) programs</u> . You may also be familiar with CTE through terms like vocational or votech education. There are no right or wrong answers. Answer freely and in a manner that best reflects your thoughts.					
Please identify the extent to which you agree or disagree with the following statements. Circle your response:					
Agree strongly (AS) - Agree partially (AP) - Don't know (DK) - Disagree partially (DP) - Disagree strongly (DS)					
9) CTE is focused and goal driven.	AS	AP	DK	DP	DS
10) CTE is open to all students.	AS	AP	DK	DP	DS
11) CTE programs can lead to productive post-secondary options.	AS	AP	DK	DP	DS
12) CTE is an outdated relic of yesteryear.	AS	AP	DK	DP	DS
13) CTE instructors are highly trained and certified.	AS	AP	DK	DP	DS
14) CTE is reliant upon student tracking.	AS	AP	DK	DP	DS
15) CTE positively affects the dropout rate.	AS	AP	DK	DP	DS
16) CTE is a vital part of comprehensive public education.	AS	AP	DK	DP	DS
17) CTE programs are publicly funded.	AS	AP	DK	DP	DS
18) CTE is highly driven by hands-on application.	AS	AP	DK	DP	DS
19) Most of what I know about CTE programs I know from (please select one of the following).					
a. ____ personal experience/enrollment in CTE courses.					
b. ____ family experience related to CTE.					
c. ____ friends during high school who were enrolled in CTE courses.					
d. ____ my high school years in general.					
e. ____ information I've encountered in my teacher education program at PSU.					
f. ____ media/popular representations of CTE.					
g. ____ other (please specify)_____					

Figure 3-2: CTE Programs

CTE Students

Figure 3-3 of the questionnaire represents items 20 through 28 and focuses on the question: “What are pre-service teachers’ perceptions and attitudes about CTE students?” Items within this section seek answers to questions such as:

- How do they perceive CTE students as “different” than most other high school students?
- How do they perceive the process by which CTE students (and/or their parents) opted for their respective CTE program?
- How do they perceive the educational expectations that CTE students have for themselves?

Part Three: Pre-service Teachers’ Understanding of CTE Students	
Please identify the extent to which you agree or disagree with the following statements. Circle your response:	
Agree strongly (AS) - Agree partially (AP) - Don’t know (DK) - Disagree partially (DP) - Disagree strongly (DS)	
20) Generally speaking, most students are placed in CTE programs based upon test scores and/or academic tracking practices within high schools.	AS AP DK DP DS
21) Generally speaking, CTE students have a unique set of learner needs.	AS AP DK DP DS
22) Generally speaking, CTE high school students are typically members of applied (i.e., lower track) high school classes.	AS AP DK DP DS
23) Generally speaking, CTE students have post-secondary education aspirations.	AS AP DK DP DS
24) Generally speaking, CTE students demonstrate age-appropriate academic achievement.	AS AP DK DP DS
25) Generally speaking, CTE students are able to complete “academic” classroom tasks.	AS AP DK DP DS
26) Generally speaking, CTE students are willing to complete “academic” classroom tasks.	AS AP DK DP DS
27) Generally speaking, CTE students are overwhelmingly male.	AS AP DK DP DS
28) Most of what I know about CTE students I know from (please select one of the following)	
a. ____ experience as a pre-service teacher.	
b. ____ personal experience/enrollment in CTE courses.	
c. ____ family experience related to CTE.	
d. ____ friends during high school who were enrolled in CTE courses.	
e. ____ my high school years in general.	
f. ____ information I’ve encountered in my teacher education program at PSU.	
g. ____ media/popular representations of CTE.	
h. ____ other (please specify) _____	

Figure 3-3: CTE Students

Instructor Roles

Figure 3-4 represents items 29 through 36 and is the final section of the questionnaire.

The questions in this section address how pre-service teachers perceive their roles as future instructors of students enrolled in CTE courses. The specific research question is: “What are pre-service teachers’ perceptions and attitudes regarding their academic instructor roles?” Items pertaining to this question focus on the following types of information:

- How, if at all, do they perceive their responsibility to “see” and instruct CTE students differently than other high school students?
- To the extent that they “see” CTE students as different, what do they make of this difference and how, if at all, might it influence their instructional practices?
- How, if at all, do they perceive their responsibility to teach CTE students in relation to (a) all students they teach, and (b) any one sub-set of students they teach?

Sources and Levels of Knowledge

In addition to a “source of knowledge” question repeated in each of the three sections just reviewed (see items 19, 28 and 36). The questionnaire also contained a final item (# 37) at its conclusion that asks participants to characterize their level of knowledge about CTE relative to that of their certification peers. This item is reflected in Figure 3.5.

Part Four: Pre-service Teachers' Understanding of Academic Instruction/CTE Relationships

Please identify the extent to which you agree or disagree with the following statements. **Circle your response:**

Agree strongly (AS) - Agree partially (AP) - Don't know (DK) - Disagree partially (DP) - Disagree strongly (DS)

29) Students in certification programs like yours should take courses that address CTE principles while in teacher prep programs.

AS AP DK DP DS

30) Students in certification programs like yours should demonstrate CTE competencies as a program requirement.

AS AP DK DP DS

31) Students in certification programs like yours should demonstrate special education competencies as a program requirement.

AS AP DK DP DS

32) Certification programs like yours should incorporate CTE-themed content into their curricula.

AS AP DK DP DS

33) Academic education high school instructors like you should work with CTE instructors to modify their curriculum.

AS AP DK DP DS

34) Academic education high school instructors like you should understand that a key feature of public education is the variety of interests and learning styles of students.

AS AP DK DP DS

35) Academic education high school instructors like you would benefit from CTE-themed professional development programs.

AS AP DK DP DS

36) Most of what I know about **academic instructor roles in CTE**, I know from (please select **one** of the following).

- a. ____ experience as a pre-service teacher.
- b. ____ personal experience/enrollment in CTE courses.
- c. ____ family experience related to CTE.
- d. ____ friends during high school who were enrolled in CTE courses.
- e. ____ my high school years in general.
- f. ____ information I've encountered in my teacher education program at PSU.
- g. ____ media/popular representations of CTE.
- h. ____ other (please specify) _____

Figure 3-4: Instructor Roles

37) Compared to other pre-service teachers in my certification area, I would characterize my level of knowledge (as distinct from my opinions, beliefs, and attitudes) about CTE as (please select **one** of the following).

- a. ____ Comprehensive
- b. ____ About average
- c. ____ Sketchy at best
- d. ____ Virtually non-existent

Figure 3-5: Comparative Level of Knowledge

Questionnaire Administration

After the questionnaire was constructed, it was submitted, along with other documentation, to the Office for Research Protections for university approval. The study was fully approved on December 2, 2008 and I administered the questionnaire on December 4, 2008. On that evening, I presented a brief synopsis of the research to all 125 potential study participants, including a period of answering any relevant questions. At the conclusion of that exercise, in accordance with official university protocol, an Informed Consent Form was distributed to all potential participants (see Appendix B). The next order of business was passing out the questionnaires. After approximately 20-25 minutes, all completed questionnaires were collected. As stated, 104 of the 125 students completed questionnaires.

Reliability and Validity

Reliability

In statistics, reliability is the accuracy and consistency of the scores obtained from a measure. Reliability analysis indicates how well the items that reflect a given construct yield similar (internally consistent) results. Cronbach's alpha was used in this study to determine the reliability (internal consistency) of the summated scores. According to Hair, Anderson, Tatham, and Black (1998), the alpha should exceed 0.7 thresholds to be highly reliable; lower than 0.3 indicates low reliability. Guilford (1973) also indicated that if Cronbach's alpha is higher than 0.7, this test score is highly reliable, while scores of 0.35 through 0.7 indicate that it is acceptable for a first generation instrument.

Table 3-1: Summary of Reliability Results (N=104)

Scale	Number of Items	Cronbach's alpha
Program Knowledge	10	.48
Student Knowledge	8	.46
Instructor's Role	7	.79

Validity

For this study, content validity was the appropriate form of validity. Content validity addresses the issue of whether the items are judged by a panel of experts (Creswell, 2009). For this study, three members of the researcher's graduate committee, judged the content of the items to be representative of the three categories (programs, students, instructor roles) with minor editorial changes to the statements.

Data Analysis

The data were obtained from pre-service students enrolled in CI 412W in the fall semester of 2008 (N=125), with 83% completing the questionnaire. Typically, when one has a census or has not used random sampling, basic descriptive statistics rather than inferential statistics have been used (Agresti and Finlay, 1997). In this study, analysis of variance (ANOVA), or inferential statistics, are used in addition to descriptive statistics such as mean, standard deviation and percentages.

The justification for using ANOVA is based on the writings of Huck (2008) and Smithson (2000). Huck (pp. 101-102) argues that when one has an abstract population that may fit an existing group, inferential statistics may be appropriate. Smithson (pp. 370-371) suggests that one can argue that inferential statistics may be used to infer statistically about hypothetical populations.

Chapter 4

Data Analysis

Participants

Data collection for this research was conducted on December 4th, 2008. All participants were secondary education majors at The Pennsylvania State University at University Park who were completing their semester of pre-student teaching at the time. A total of 104 completed questionnaires were used in the analysis of data. This number represented 83% of all distributed questionnaires. Among the respondents, 60 (58%) were females and 44 (42%) were males. The “typical” respondent in this study proved to be a 22 year-old suburbanite from a middle-class family who graduated in the top quartile from a comprehensive high school along with 370 other seniors four years prior to completing this questionnaire. Basic demographic information can be found in Tables **4-1** and **4-2**. Data analysis was conducted using Statistics Package for Social Sciences (SPSS 2000).

Table 4-1: Frequencies for participant background

Gender	Frequency	Valid Percent
Male	44	42.3
Female	60	57.7
Total	104	100.0
Hometown	Frequency	Valid Percent
Urban	7	6.7
Suburban	72	69.2
Rural	23	22.1
Other	2	1.9
Total	104	100.0
Socio-Economic Status	Frequency	Valid Percent
Upper Class	11	10.6
Middle Class	87	83.7
Lower Class	5	4.8
Other	1	1.0
Total	104	100.0
High School	Frequency	Valid Percent
Comprehensive	90	86.5
Private	13	12.5
Focused Charter/Magnet	1	1.0
Total	104	100.0
Graduation Rank	Frequency	Valid Percent
Top Quartile	89	85.6
Second Quartile	7	6.7
Third Quartile	8	7.7
Total	104	100.0
Certification Area	Frequency	Valid Percent
Social Studies	34	32.7
English	15	14.4
World Language	15	14.4
Science	16	15.4
Mathematics	24	23.1
Total	104	100.0

Table 4-2: Descriptive statistics for age and high school class size characteristics

	Age	High School Grad Class Size
Number of respondents	104	103
Mean	22.07	372.61
Median	21.00	300.00
Standard Deviation	2.788	262.426
Range Low	21	48
Range High	43	1500

Questionnaire Organization

The questionnaire included four sections and 37 questions in total (see Appendix A). The first section consisted of eight demographic-related questions (see Tables 4-1 and 4-2). The remaining three sections were organized to reflect the study's three research questions. Each of these sections includes a number of Likert scale items and one multiple choice question. Section 2 of the survey addresses research question 1: *What are pre-service teachers' perceptions and attitudes about CTE programs in general?* It consists of 10 Likert item questions. The third section addresses the 2nd research question: *What are pre-service teachers' perceptions and attitudes about CTE students?* This section consists of eight Likert item questions. The final section addresses the 3rd research question: *What are pre-service teachers' perceptions and attitudes regarding their academic instructor roles?* This final section consists of seven Likert scale items.

Section Two: CTE Program Knowledge

This section asks participants to answer a series of questions geared toward learning what types of broad knowledge they have about CTE in general. Questions range from how CTE is structured to how CTE affects the national drop-out rate. Some questions were heavily opinion-driven and others focused on evidence-based facts about CTE.

There were several intriguing responses, especially when juxtaposed with those of other items. In fact, in many instances, juxtaposition of items establishes a pattern of somewhat inconsistent and confusing responses. Themes were teased out and used in an attempt to critique responses in a context that emphasizes connectivity. For example, items 10 and 14 were paired

because they both deal with how students might become involved in CTE. As shown in Table 4-3, 72.4% of participants believed that CTE employs open enrollment (which it does).

Respondents were, however, less sure about what role tracking plays in CTE student enrollment. While a large percentage (49%) did *not* believe CTE was “heavily reliant upon student tracking,” more than half (51%) either didn’t know or believed that tracking governed enrollment. The fact that more than 70% of participants believe CTE is open to all students yet half are unsure or mistaken about the role of tracking is somewhat peculiar. Might this be an example of simple contradiction, or is it a nod to the oft-assumed notion that while CTE is open to all, only those who are steered toward it find it worth enrollment?

The idea of “public” education was used when grouping items 16 and 17. While 76% of participants agreed to some degree that CTE is “a vital part of comprehensive public education,” even more (78.8%) did not know that CTE is publicly funded. This discrepancy suggests that some basic confusion among this population exists about exactly how CTE fits into the jurisdiction of the “public” domain, and calls into question whether CTE is really understood as being a part of “public” education at all. How, then, do respondents understand CTE: Is it semi-public? Is it some bizarre “thing” that exists independently (especially financially), yet oddly connected as a “vital part of comprehensive public education?”

Items 11 and 15 each focus on student outcomes. Participants responded overwhelmingly, and correctly (86.5%), that CTE can lead to productive post-secondary options; however, nearly 50% didn’t know or disagreed with the fact that CTE is identified as a positive factor in reducing the drop-out rate within public high schools. Once again, these statements do not fully complement one another. Wouldn’t a program that was instrumental in post-secondary achievement also be effective in student retention efforts?

The commonality of addressing basic tenets of CTE was used to pair items nine and 14. The vast majority of participants correctly judged CTE (strongly or partially) as being hands-on

(95.2%) and goal driven (81.7%). These responses exhibited that participants were able to appropriately identify two of the fundamental principles of CTE. Interestingly, item 12, while not directly connected to the afore-mentioned theme, calls into question the extended relevance of that identification. A large percentage (77%) of respondents viewed CTE as being “an outdated relic of yesteryear.” In some regard, I understand these three items to be linked in that they seem to indicate that while participants understand what CTE is basically all about, they also believe it to be outdated, perhaps archaic. Considering that among the principal goals of CTE advocates is achieving greater cohesion between the academic and CTE communities, this disconnect is quite troubling, for it begs the question of whether these future teachers are likely to invest their energy integrating ideas from a program that they deem “outdated.”

CTE Program Knowledge Summary

In sum, items nine through 18 reveal some compelling things about how pre-student teachers perceive CTE programs in general. According to the data, they seem to be confused in many of their perceptions about CTE. The data show inconsistencies regarding the “public” dominion of CTE, as well as how students wind up in CTE courses and what outcomes await them. Also, while respondents were able to correctly identify some of the foundations of CTE, they overwhelmingly perceived CTE as being outdated.

Table 4-3: Distribution of responses for knowledge of CTE programs

Item number	Strongly Agree		Partially Agree		Don't Know		Partially Disagree		Strongly Disagree	
	Count	Row N%	Count	Row N%	Count	Row N%	Count	Row N%	Count	Row N%
9) Goal driven	38	36.5%	47	45.2%	17	16.3%	1	1.0%	1	1.0%
10) Open enrollment	46	44.2%	30	28.2%	18	17.3%	10	9.6%	0	0%
11) Post-sec options	46	44.2%	44	42.3%	7	6.7%	6	5.8%	1	1.0%
12) Outdated	45	43.3%	35	33.7%	13	12.5%	10	9.6%	1	1.0%
13) Highly trained instructors	14	13.5%	32	30.8%	48	46.2%	9	8.7%	1	1.0%
14) Tracking	4	3.8%	5	4.8%	44	42.3%	39	37.5%	12	11.5%
15) Drop-out rate	19	18.3%	34	32.7%	41	39.4%	6	5.8%	4	3.8%
16) Vital	39	37.5%	40	38.5%	10	9.6%	13	12.5%	2	1.9%
17) Public funding	11	10.6%	10	9.6%	82	78.8%	1	1.0%	0	0%
18) Hands-on	70	67.3%	29	27.9%	4	3.8%	0	.0%	1	1.0%

Section Three: CTE Student Knowledge

This section asks participants to answer a series of questions that attempt to glean information about what they know about CTE students. The eight Likert items in this section are predominately general queries about student identity, academic performance, and educational needs and expectations (see Table 4-4). Items 20, 22 and 27 address student identity. An almost equal distribution of students agreed (33.7%) and disagreed (36.5%) that “most students are *placed* in CTE programs based upon test scores and academic tracking practices,” while 29.8% just didn’t know. All scores hovering around 30% somewhat re-affirms the contradictory findings about CTE student enrollment from the previous section. While participants decisively rejected (81.8%) the notion that CTE students were “typically members of applied” classes, they were less sure of a possible connection between CTE and gender: While 50.9% of participants

disagreed with the idea that CTE students were “overwhelmingly male,” 49% responded that they either agreed or didn’t know.

Academic performance was the focus of items 24, 25 and 26. Some 40.4% of participants agreed that “CTE students demonstrate age-appropriate academic achievement,” while 59.6% either disagreed or didn’t know. The large majority of students (70.2%) agreed that CTE students were *able* to complete academic classroom tasks, but 60.6% either didn’t know or disagreed that these same students were *willing* to complete “academic” classroom tasks. These responses indicate a perception that CTE students may not be performing up their academic capabilities due to a lack of effort.

Finally, items 21 and 23 address the needs and expectations of CTE students. Many respondents (58.6%) indicated that CTE students have a unique set of learner needs, yet 41.4% indicated that they disagreed or didn’t know about this statement. Additionally, a large percentage of participants (72.1%) responded that they either didn’t know or disagreed that CTE students have “post-secondary aspirations.”

CTE Student Knowledge Summary

Like the previous section, items 20 through 27 demonstrated the intricacies and confusions that mark the perceptions of CTE students by research participants. Specifically, the data show that, as with “program” knowledge, participants viewed CTE students in varied and complex ways. Aside from the resounding agreement that CTE students were not necessarily members of applied (i.e., tracked) classes, participants seemed confused about whether CTE students were, in fact, tracked into their program. As in the previous section (items 10 and 14),

participants struggled particularly with how students become involved in CTE. The lack of clarity about CTE’s relationship to tracking is consistent.

Too, respondents in this section seem to indicate overwhelmingly that CTE students do *not* have post-secondary aspirations, while responding in the previous section (item 11) that CTE could potentially lead to “productive secondary options.” Finally, mixed messages remain concerning questions about CTE students’ willingness, ability, and actual demonstration of age-appropriate academic achievement.

Table 4-4: Distribution of responses for knowledge of CTE students

Item Number	Strongly Agree		Partially Agree		Don’t Know		Disagree Partially		Strongly Disagree	
	Count	Row N%	Count	Row N%	Count	Row N%	Count	Row N%	Count	Row N%
20) CTE placement	14	13.5%	21	20.2%	31	29.8%	30	28.8%	8	7.7%
21) CTE learner needs	10	9.6%	51	49.0%	18	17.3%	19	18.3%	6	5.8%
22) Applied classes	4	3.8%	7	6.7%	8	7.7%	66	63.5%	19	18.3%
23) Post-secondary aspirations	7	6.7%	22	21.2%	16	15.4%	51	49.0%	8	7.7%
24) Academic achievement	7	6.7%	35	33.7%	29	27.9%	31	29.8%	2	1.9%
25) Academically able	21	20.2%	52	50.0%	12	11.5%	19	18.3%	0	.0%
26) Academically willing	7	6.7%	34	32.7%	12	11.5%	48	46.2%	3	2.9%
27) CTE gender	3	2.9%	25	24.0%	23	22.1%	36	34.6%	17	16.3%

Section Four: Instructor Roles

This section asks participants to answer a series of questions about how they view the role of academic instructors in relation to CTE. A series of seven Likert item questions was used

to elicit responses that give insight toward that end (see Table 4-5). These items were divided into two themes. Items 29 through 32 centered on CTE and academic-focused secondary education certification programs. CTE and academic instructors was the focal point for items 33 through 35.

A majority of students (57.6%) agreed that students in certification programs like theirs “should take courses that address CTE principles,” while a little over a third (36.6%) disagreed and 5.8% didn’t know. Participants were more divided (51% agreement, 49% disagreement or uncertainty) when asked if certification programs like theirs “should actually incorporate CTE-themed content into their curricula.” There was a significant shift in attitude when asked if students in certification programs like theirs “should demonstrate CTE competencies as a *program requirement*.” A solid majority (64.5%) of participants indicated they disagreed or didn’t know in response to that statement, while 35.6% agreed with it. For the sake of comparison, participants were asked if they believed that students in certification programs like theirs “should demonstrate *special education* competencies as a program requirement.” A reverberating 85.6% agreed with this statement, while only 14.4% disagreed or didn’t know.

Participants were in clear agreement (62.5) and supportive of the proposal for academic instructors to “work with CTE instructors to modify their curriculum.” Still, a substantial percentage (37.5%) either disagreed or didn’t know about that statement. Agreement tapered off slightly (56.8%) in response to whether or not academic education instructors “would benefit from CTE-themed professional development programs.” Accordingly, 43.3% disagreed or didn’t know about that statement.

Instructor Roles Summary

The data reflected in Table 4-5 exhibits some interesting findings and a prevalent theme in participant perceptions about their academic instructor roles in relation to CTE. To begin, responses seem to shift based on the level of commitment asked of participants. While these pre-service teachers were somewhat open to the idea of taking courses that addressed CTE principles, perhaps as an elective from an outside department, they were less supportive of the idea of CTE themed content being incorporated into their certification program. Further, they were even less willing to commit to demonstrating CTE competencies as a program requirement, though almost fully committed to doing so as it relates to special education. This particular distinction suggests that participants may view CTE as an “additional” program, akin to art or music, rather than an essential one like special education. As exhibited by items 29, 30 and 32, items 33 and 35 suggest more than half the participants were open to the idea of non-required curriculum modifications and professional development explorations of CTE.

Table 4-5: Distribution of responses for academic instructor roles

Item Number	Strongly Agree		Partially Agree		Don't Know		Partially Disagree		Strongly Disagree	
	Count	Row N%	Count	Row N%	Count	Row N%	Count	Row N%	Count	Row N%
29) CTE coursework	17	16.3%	43	41.3%	6	5.8%	27	26.0%	11	10.6%
30) CTE competency	10	9.6%	27	26.0%	11	10.6%	34	32.7%	22	21.2%
31) Special Ed Competency	45	43.3%	44	42.3%	4	3.8%	9	8.7%	2	1.9%
32) CTE incorporation	9	8.7%	44	42.3%	10	9.6%	32	30.8%	9	8.7%
33) Curriculum modification	15	14.4%	50	48.1%	12	11.5%	18	17.3%	9	8.7%
34) Variety of interests	76	73.1%	26	25.0%	2	1.9%	0	.0%	0	.0%
35) CTE prof. development	14	13.5%	45	43.3%	22	21.2%	17	16.3%	6	5.8%

Comparative Levels of Knowledge and Sources of Knowledge

In addition to questions based upon the three over-arching categories within this study (CTE *program* perceptions, CTE *student* perceptions, and perceptions of academic *instructor roles*), there were also questions about comparative levels of knowledge and the sources of that knowledge. This section focuses on those two queries. The concluding item (number 37) in the questionnaire asks participants to characterize their level of knowledge about CTE in general, compared to their certification peers, based on four options: comprehensive, about average, sketchy at best, or virtually non-existent. Items 19, 28, and 36 each ask participants to identify the primary source of their CTE knowledge acquisition.

Comparative Levels of Knowledge

In the final questionnaire item, pre-service teachers were asked to rate their own level of CTE knowledge in relation to the knowledge that others in their certification area (social studies, mathematics, etc.) have about CTE. Though fewer than 5% chose an extreme position (i.e., comprehensive or virtually non-existent), 47.1% said that their knowledge of CTE was “about average” with their peers’ knowledge (see Figure 4-1). However, 48.1% believe that, in comparison to their certification peers, their knowledge of CTE was “sketchy at best.”

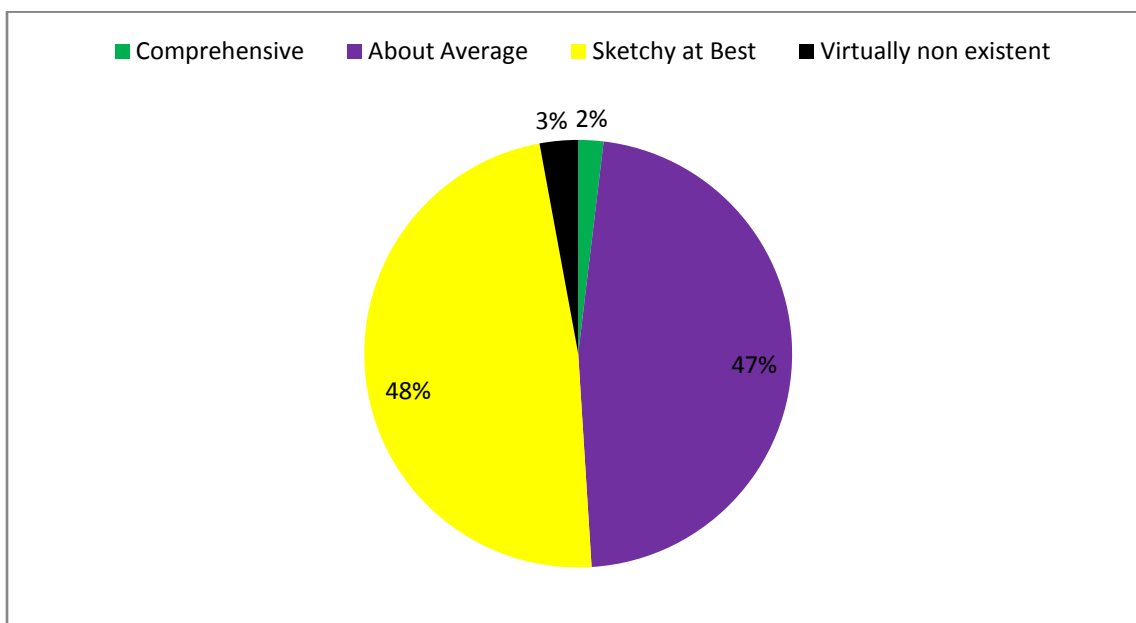


Figure 4-1: Overall Levels of Knowledge

Sources of Knowledge

Respondents' overall source of knowledge about CTE in every category (Programs, Students, Instructor Roles) stems largely from their high school experiences and those of their high school friends (see Table 4-6). Beyond these high school exposure sources, combined exposure to media and their PSU coursework represents the pre-service teachers' next influential source of CTE knowledge, with nearly 25% of their knowledge about their future roles as academic instructors working with CTE students coming from this combination of sources. Respondents' knowledge of these three CTE categories stems least of all from the combined sources of personal or family exposure to CTE.

Table 4-6: Sources of Knowledge

	Experiential Exposure		High School-related Exposure		External Exposure		Other
	Personal Experience	Family Experience	High School Friends	High School in General	PSU Teacher Ed. Program	Media	
Program	3.8%	9.6%	28.8%	37.5%	9.6%	8.7%	1.9%
	13.4% combined		66.3% combined		18.3% combined		
Student	1.9%	6.7%	30.8%	40.4%	5.8%	9.6%	4.8%
	8.6% combined		71.2% combined		15.4% combined		
Instructor	2.9%	5.8%	13.5%	44.2%	12.5%	11.5%	9.6%
	8.7% combined		57.7% combined		24.0% combined		

Demographical Analysis of Categorical Perceptions

In addition to looking at respondents' perceptions of CTE by categories (programs, students, and instructor roles), the data below explore these perceptions according to gender, age, hometown description, socio-economic status (SES), type of high school attended, size of high school graduating class, high school graduation rank, and teaching certification area. Analysis of variance (ANOVA) was used to examine these differences. Assumptions regarding normality, using skewness and kurtosis values and equal variance, were examined using Levene's test. Assumptions for all values were met using Hucks guidelines (2008). The scale used for each of these figures is weighted positively to negatively from one to five. Therefore a score of one would indicate a more desirable response than a score of five.

Gender

Table 4-7 and Figure 4-2 summarize differences by gender. There are no significant differences between males and females regarding their perceptions of CTE programs, CTE students or participants' roles as instructors of CTE students. The greatest difference between gender was in regard to perceptions of CTE students, but that difference was not significant.

Table 4-7: ANOVA results examining differences by gender

Variable by Gender	Frequency	Mean	Standard Deviation	F	p	Partial Eta Squared
Programs						
Male	44	3.64	1.42	.429	.514	.004
Female	60	3.80	1.13			
Students						
Male	44	3.75	1.38	.591	.210	.015
Female	60	3.42	1.29			
Instructor Roles						
Males	44	3.64	1.66	<.001	.993	<.001
Female	60	3.63	1.62			

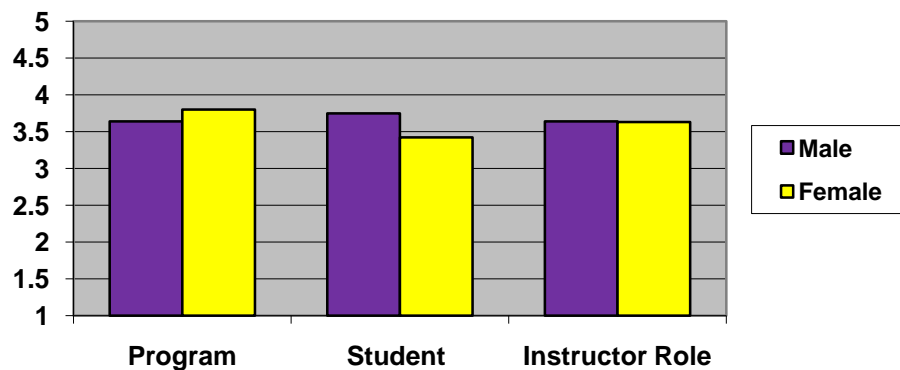


Figure 4-2: Perceptions by Gender

Hometown

The data show no significant differences in perceptions based on hometown. Table 4-8 and Figure 4-3 provide visual representations of these findings.

Table 4-8: ANOVA results examining differences by hometown

Variable by Hometown	Frequency	Mean	Standard Deviation	F	p	Partial Eta Squared
Programs						
Urban & Suburban	79	3.81	1.31	1.316	.254	.013
Rural & Other	25	3.48	1.05			
Students						
Urban & Suburban	79	3.58	1.43	.110	.740	.001
Rural & Other	25	3.48	1.01			
Instructor Roles						
Urban & Suburban	79	3.71	1.70	.684	.410	.007
Rural & Other	25	3.40	1.38			

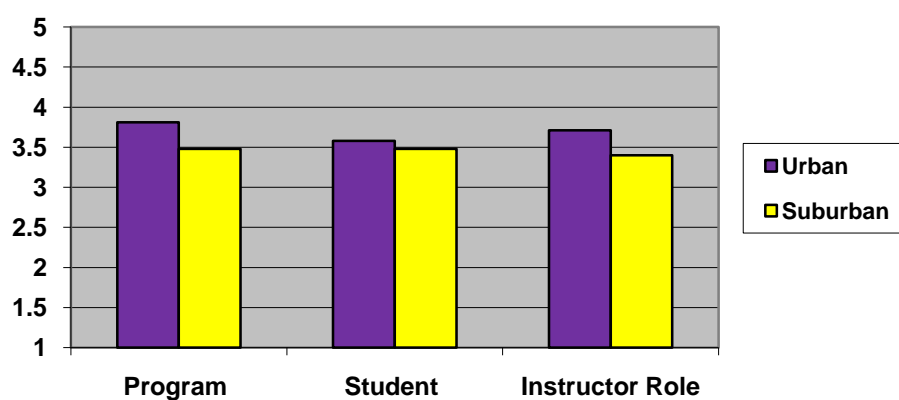


Figure 4-3 Perceptions by Hometown

Socio-Economic Status

As shown in Table 4-9 and Figure 4-4, there are no significant statistical differences in perceptions based on SES. It is worth noting however, that the mean scores reflect a staggered effect, from upper to lower class, across all three sections. Table 4.8 reflects this point in greater detail.

Table 4-9: ANOVA results examining differences by SES

Variable by SES	Frequency	Mean	Standard Deviation	F	p	Partial Eta Squared
Programs						
Upper Class	11	4.36	1.12	2.508	.087	.047
Middle Class	87	3.70	1.26			
Lower Class	6	3.00	1.10			
Students						
Upper Class	11	4.09	1.04	1.433	.243	.028
Middle Class	87	3.53	1.37			
Lower Class	6	3.00	1.10			
Instructor Roles						
Upper Class	11	4.36	.92	1.426	.245	.027
Middle Class	87	3.57	1.65			
Lower Class	6	3.17	2.14			

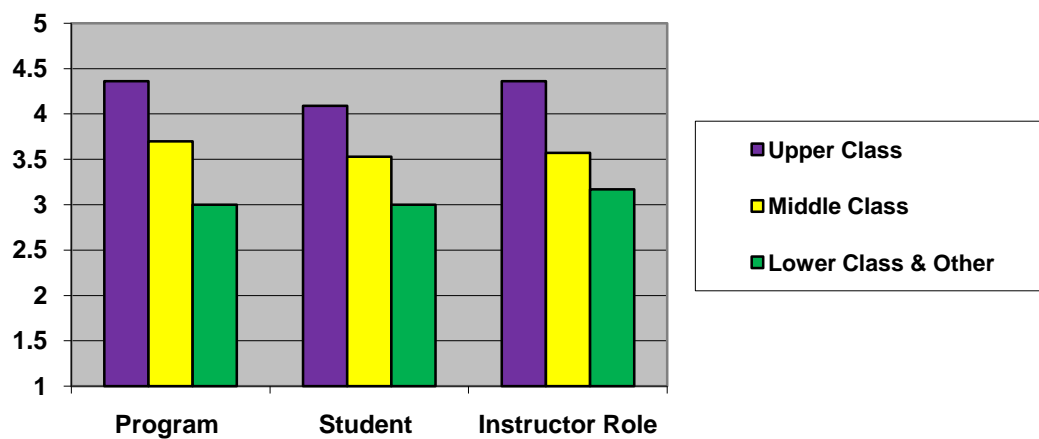


Figure: 4-4 Perceptions by SES

High School Type

Data shows that a difference in perceptions based on type of high school attended proved to be significant. Table 4-10 and Figure 4-5 reflect these respective differences. Those respondents from comprehensive public high schools repeatedly demonstrated more accurate perceptions of CTE across the three areas of questioning, while private school graduates were consistently less accurate. It becomes clear below that “sources of knowledge” figure prominently into this finding (see Figures 4-10 – 4-18).

Table 4-10: ANOVA results examining differences by high school type.

Variable by High School Type	Frequency	Mean	Standard Deviation	F	p	Partial Eta Squared
Programs						
Comprehensive Public	90	3.62	1.21	5.198	.025	.048
Private, Charter, Magnet, Other	14	4.43	1.40			
Students						
Comprehensive Public	90	3.46	1.29	4.026	.047	.038
Private, Charter, Magnet, Other	14	4.21	1.48			
Instructor Roles						
Comprehensive Public	90	3.51	1.63	3.971	.049	.037
Private, Charter, Magnet, Other	14	4.43	1.40			

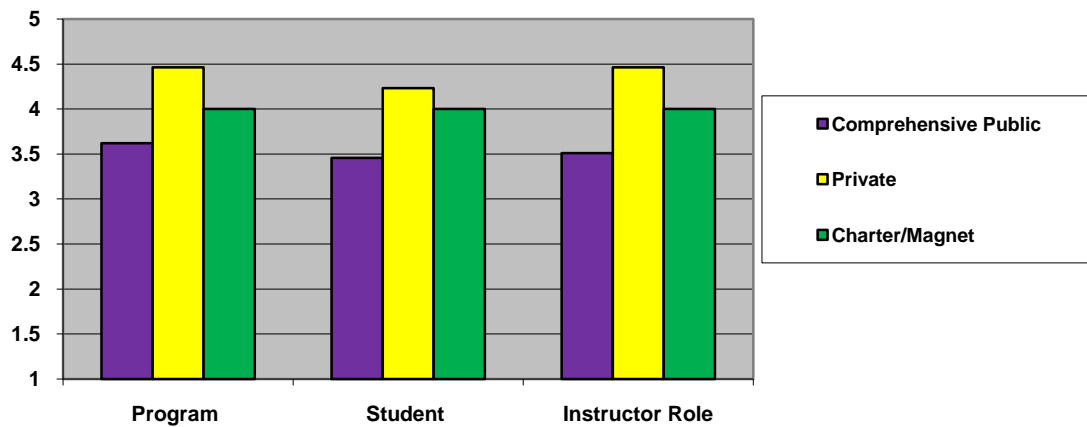


Figure 4-5: Perceptions by High School Type

High School Graduation Rank

While there were no significant statistical differences in perceptions according to respondents' high school rank, differences in perceptions of CTE programs and instructor roles did *approach* statistical significance. Table 4-11 and Figure 4-6 illustrate these findings.

Table 4-11: ANOVA results examining differences by graduation ranking

Variance by Graduation Ranking	Frequency	Mean	Standard Deviation	F	p	Partial Eta Squared
Programs						
Top Quartile	89	3.82	1.22	3.197	.077	.030
Second or Third Quartile	15	3.20	1.37			
Students						
Top Quartile	89	3.61	1.24	.831	.364	.008
Second or Third Quartile	15	3.27	1.83			
Instructor Roles						
Top Quartile	89	3.75	1.54	3.337	.071	.032
Second or Third Quartile	15	2.93	1.98			

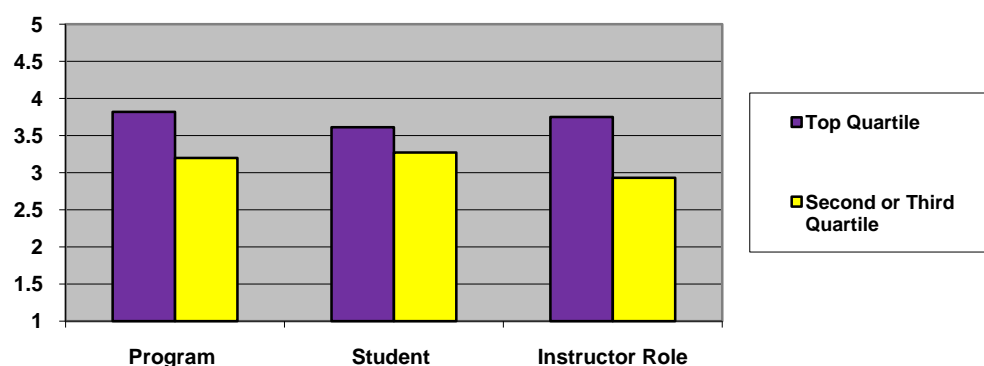


Figure 4-6: Perceptions by High School Rank

Certification Area

The data revealed no statistical differences in perceptions based upon the certification area of respondents. This finding is outlined in Table 4-12 and Figure 4-7.

Table 4-12: ANOVA results examining differences by certification area

Variable by Certification Area	Frequency	Mean	Standard Deviation	F	p	Partial Eta Squared
Programs						
Social Studies	34	3.44	1.58	1.04	.391	.040
Science	16	4.19	1.05			
Math	24	3.71	1.12			
English	15	3.87	1.06			
World Language	15	3.80	.94			
Students						
Social Studies	34	3.56	1.35	.473	.756	.019
Science	16	3.94	1.34			
Math	24	3.54	1.18			
English	15	3.40	1.72			
World Language	15	3.33	1.75			
Instructor Roles						
Social Studies	34	3.4	1.70	1.894	.588	.028
Science	16	4.1	1.31			
Math	24	3.5	1.74			
English	15	3.7	1.80			
World Language	15	3.9	1.41			

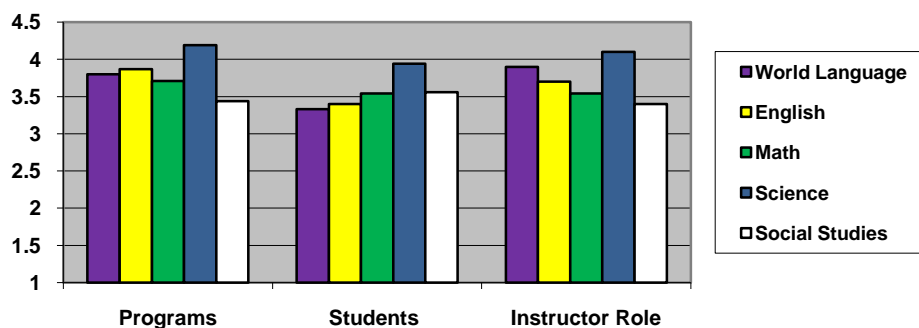


Figure 4-7: Perceptions by Certification Area

Sources and Comparative Levels of Knowledge Relative to High School Type

In this section, comparative levels of knowledge and sources of knowledge are explored according to the type of high school attended. While graduates of private, focused charter, and magnet schools only comprise 13.5% of all study participants (see Table 4-1), it is important to focus on differences within this demographic as it is the only one that reached the level of statistical significance. As noted earlier, Figure 4-1 reflects the responses from all participants regarding how they would characterize their level of knowledge about CTE in comparison to their certification peers. The findings show that most participants identified with having either an average level (47.1%) or sketchy level (48.1%) of comparative peer knowledge about CTE.

Comparative Levels of Knowledge: Comprehensive High School Graduates

Figure 4-8 illustrates the findings of all participants who are graduates of comprehensive public high schools and comparing themselves to certification peers. Results show that 50% of this sample believes that their knowledge is sketchy at best while 45.6% believe their knowledge

level is about average. Of the remaining 4.4%, half responded as having comprehensive knowledge and half as having virtually no knowledge at all. In short, graduates of comprehensive high schools look quite similar to the entire collection of respondents.

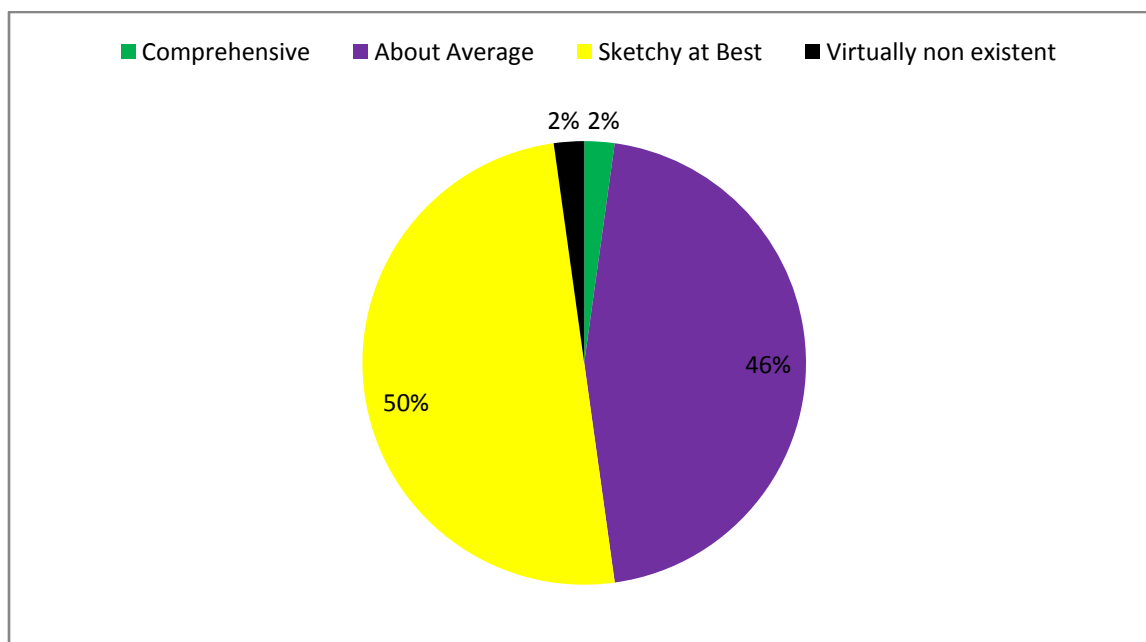


Figure 4-8: Comparative Levels of Knowledge: Comprehensive High School Graduates

Comparative Levels of Knowledge: Private, Charter, or Magnet School Graduates

In contrast to graduates of comprehensive high schools, no participants who graduated from private, charter, or magnet schools claimed a comprehensive level of knowledge regarding CTE, while 7.1% admitted having virtually no knowledge of CTE. The majority of respondents (57%) claimed to have about average knowledge, and 35.7% said that their level of understanding was sketchy at best compared to their certification peer group (see Figure 4-9).

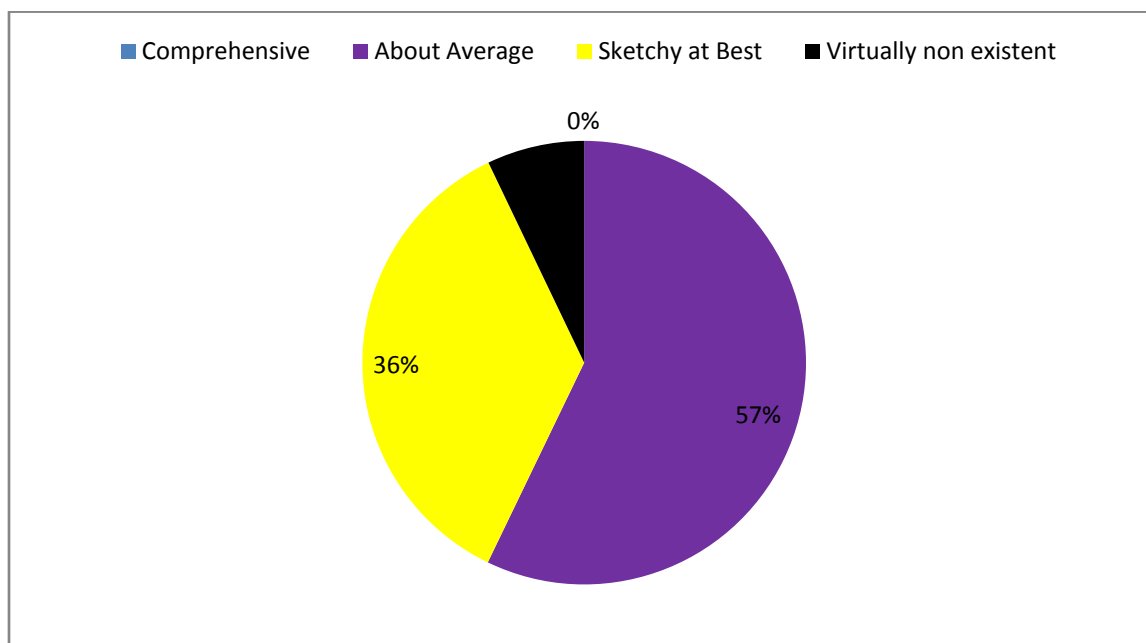


Figure 4-9: Comparative Levels of Knowledge:
Private, Charter or Magnet School Graduates

Sources of Program Knowledge

The results for overall CTE program knowledge showed heavy trends toward gathering of knowledge based upon high school years in general (37.5%) and exposure based upon interaction with friends who were enrolled in CTE courses (28.8%). No other option received as much as 10 percent of the over-all participants' responses (see Figure 4-10).

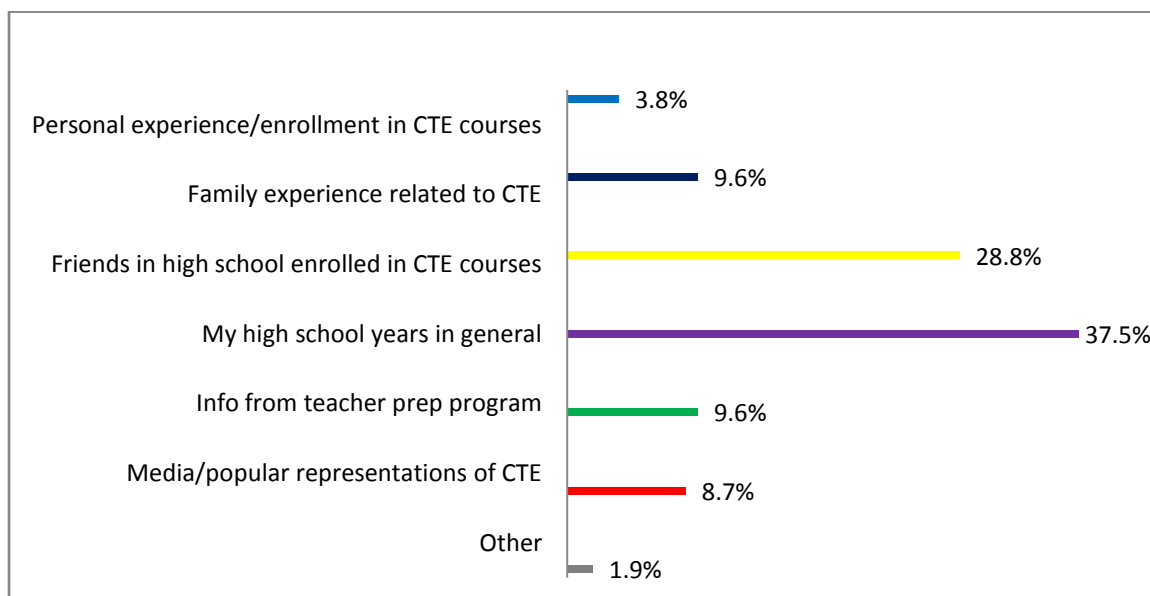


Figure 4-10: Overall Sources of Program Knowledge

Sources of Program Knowledge: Comprehensive Public School Graduates

Figure 4-11 makes it apparent that graduates of comprehensive public high schools trended more strongly in the direction of what was found in the over-all results. This group responded that they were strongly influenced by their high school years in general (38.9%) and by friends who were enrolled in CTE courses (32.2%).

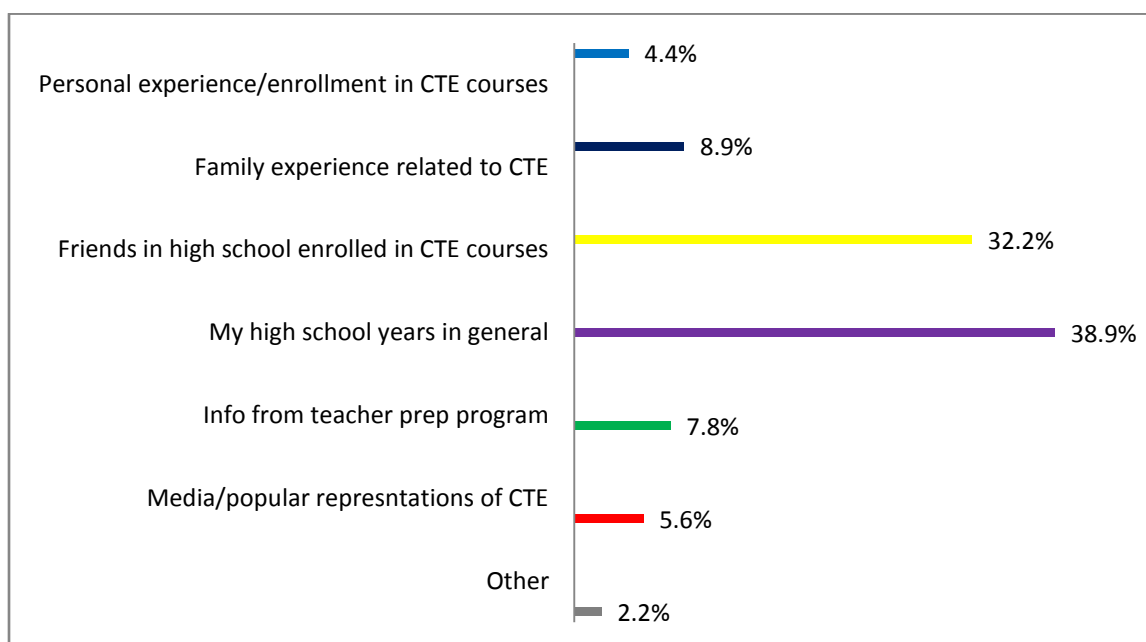


Figure 4-11: Sources of Program Knowledge: Comprehensive Public School Graduates

Sources of Program Knowledge: Private, Focused Charter or Magnet School Graduates

Among students who graduated from private, focused charter or magnet schools, scores were a bit more dispersed; with four different sources receiving at least 14% (see Figure 4-12). While many (28.6%) responded that they were influenced by their high school years in general, this was 10% fewer than their peers who had graduated from comprehensive public high schools. However, while only 5.6% of students from comprehensive public schools described media and popular representations as being the source of their knowledge about CTE programs, five times that number of private, focused charter and magnet school graduates cited this as a source of information for them. Also of interest is that graduates of private, focused charter and magnet schools were more than four times less likely to have noted friends who were enrolled in CTE courses as being the source of their CTE program knowledge acquisition.

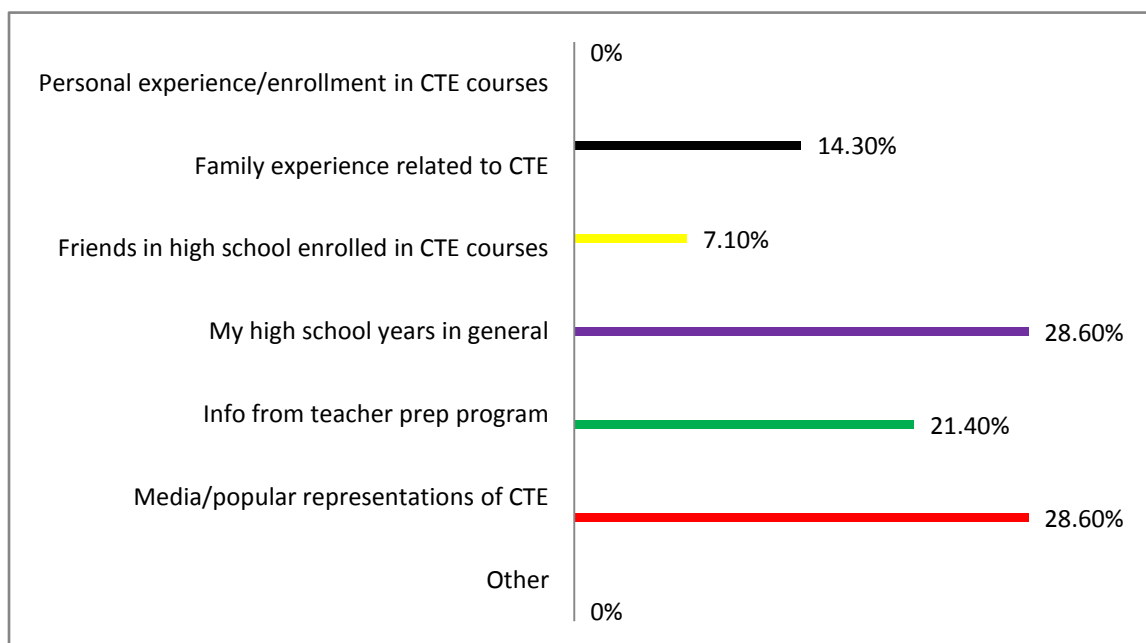


Figure 4-12: Sources of Program Knowledge: Private, Charter, or Magnet School Graduates

Sources of Student Knowledge

Moving to the second research category which addresses what pre-service teacher's know about CTE students, the same method of analysis was used, given the significance of high school background. In Figure 4-13, a trend similar to that of over-all program knowledge was clearly evident. In fact, the identification of high school years in general and friends enrolled in CTE courses as being the basis for their knowledge was even more frequent. High school years in general accounted for 40.4% of over-all respondents' knowledge source concerning CTE students. This represents an increase of about 3% from question 1. Similar to that trend was the one reflected in the 2% increase among those who identified high school friends enrolled in CTE courses as being their knowledge source (30.8%).

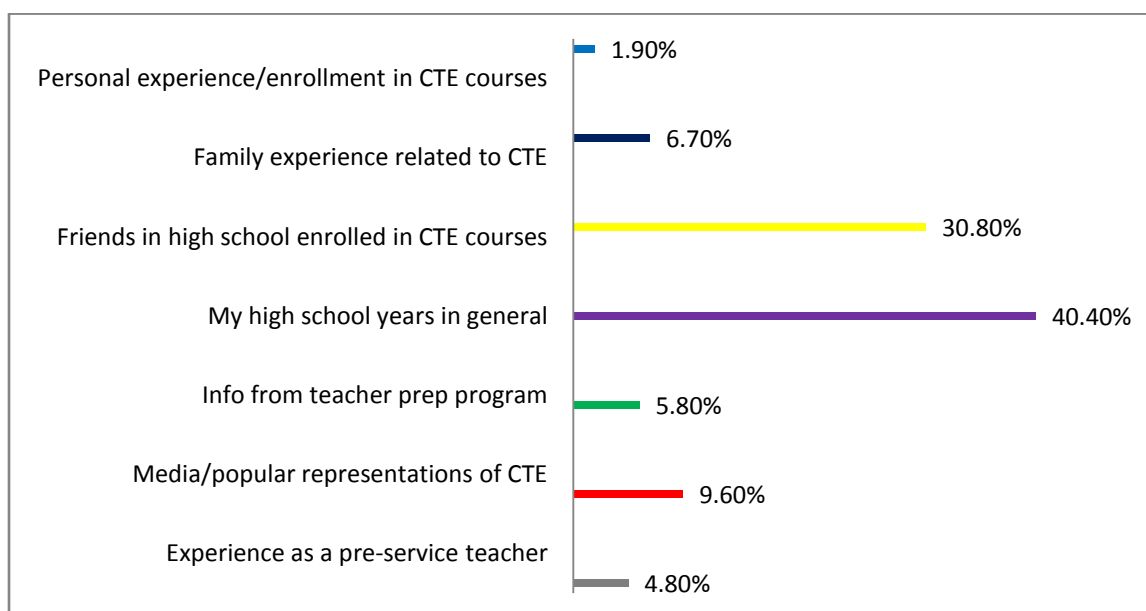


Figure 4-13: Overall Sources of Student Knowledge

Sources of Student Knowledge: Comprehensive Public School Graduates

These two popular knowledge sources increased when focused exclusively on those participants who graduated from a comprehensive high school (see Figure 4-14). Among these participants, 43.3% responded that high school years in general were the source of their knowledge about CTE students. Additionally, 32.2% of these comprehensive public high school graduates responded that their knowledge was acquired, chiefly, through friends in high school who were enrolled in CTE courses. These two (of seven) sources accounted for over 75% of all comprehensive public school participants responses.

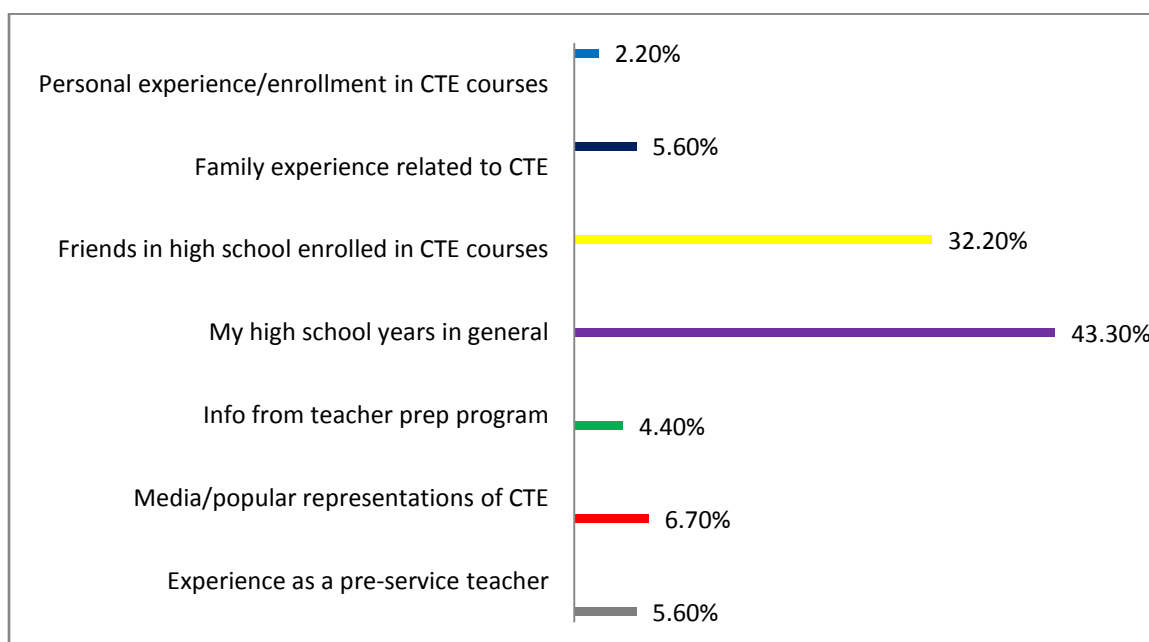


Figure 4-14: Sources of Student Knowledge: Comprehensive Public School Graduates

Sources of Student Knowledge: Private, Charter or Magnet School Graduates

Percentages were, once again, much more dispersed and quite different among graduates of private, focused charter and magnet schools (see Figure 4-15). Interestingly, media and popular representations led the way again with 28.57% of respondents indicating these as their primary source for knowledge about CTE students. Perhaps not surprisingly, fewer than 43% of this high school group gained their CTE student knowledge from their own or their peers' high school experience.

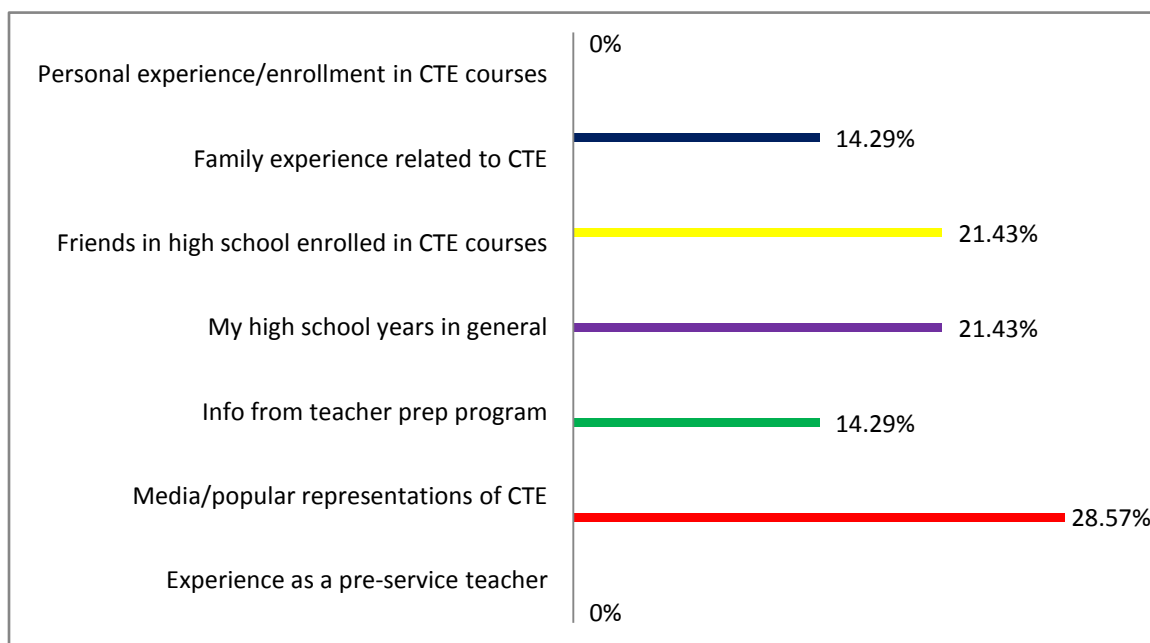


Figure 4-15: Sources of Student Knowledge: Private, Charter or Magnet School Graduates

Sources of Instructor Roles Knowledge

The final section focuses on pre-service teachers' knowledge of their own future roles as (academic) high school teachers of CTE students. The overall responses were consistent in that most (57.7%) responded that their high school years in general and knowledge from their CTE-enrolled high school friends served as the primary source for their knowledge about instructors' roles (see Figure 4-16).

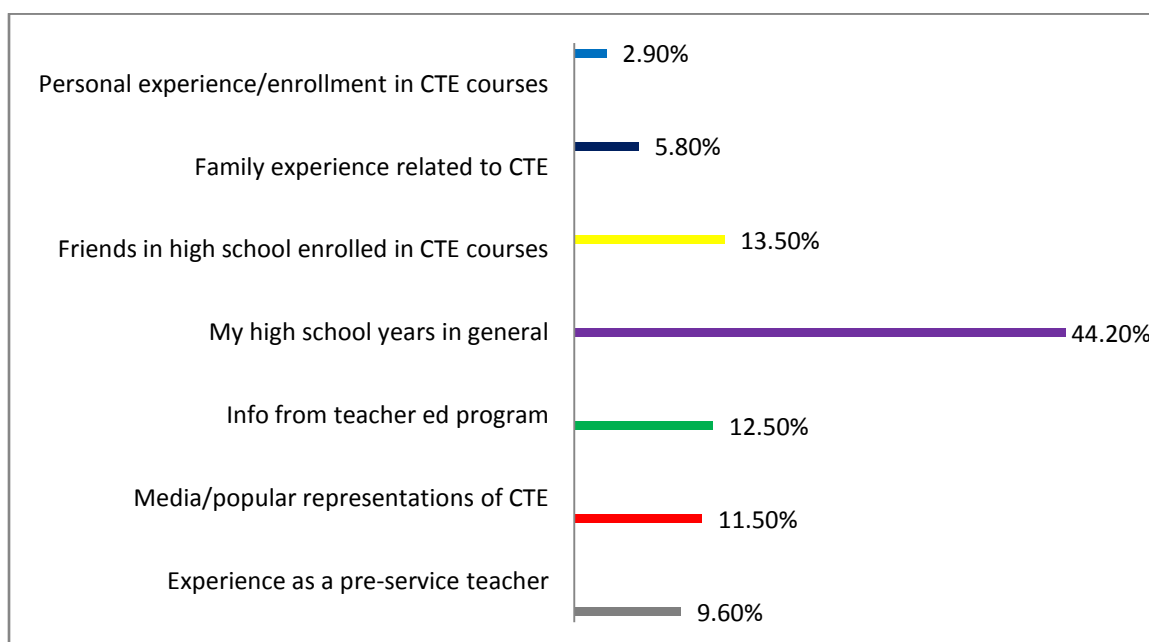


Figure 4-16: Overall Sources of Instructor Roles Knowledge

Sources of Instructor Roles Knowledge: Comprehensive Public School Graduates

As with the over-all pool of respondents, most graduates of comprehensive public high schools (46.7%) indicated that the strongest source of their CTE knowledge was formed as a result of their high school years in general. Coupled with knowledge gleaned from their high school friends enrolled in CTE courses, this figure rises to 61.1% (see Figure 4-17).

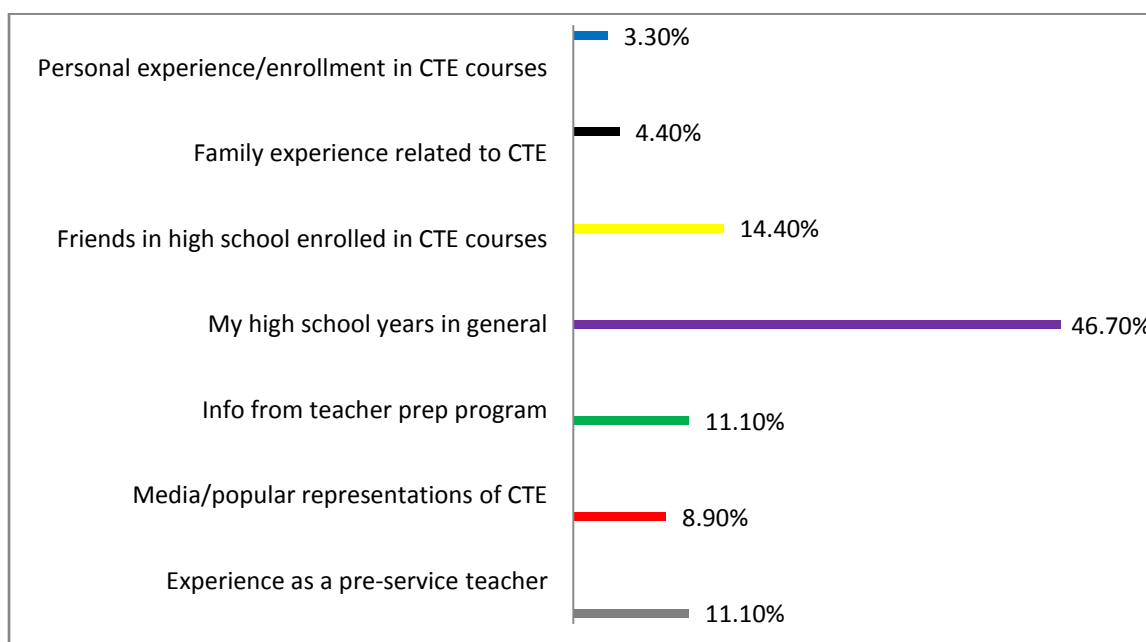


Figure 4-17: Sources of Instructor Role Knowledge:
Comprehensive Public High School Graduates

Sources of Instructor Roles Knowledge:

Private, Charter or Magnet School Graduates

Once again, differences between graduates of private, focused charter and magnet schools and comprehensive public high schools remain clear. As established in each previous category, these respondents continued to cite media (28.6%) as a prominent source of CTE knowledge. Also looming largely for these participants was information they've encountered during their PSU teacher preparation program. Too, when combining their high school years in general with friends in high school enrolled in CTE courses, the percentage tallies a noteworthy 35.7% (see Figure 4-18).

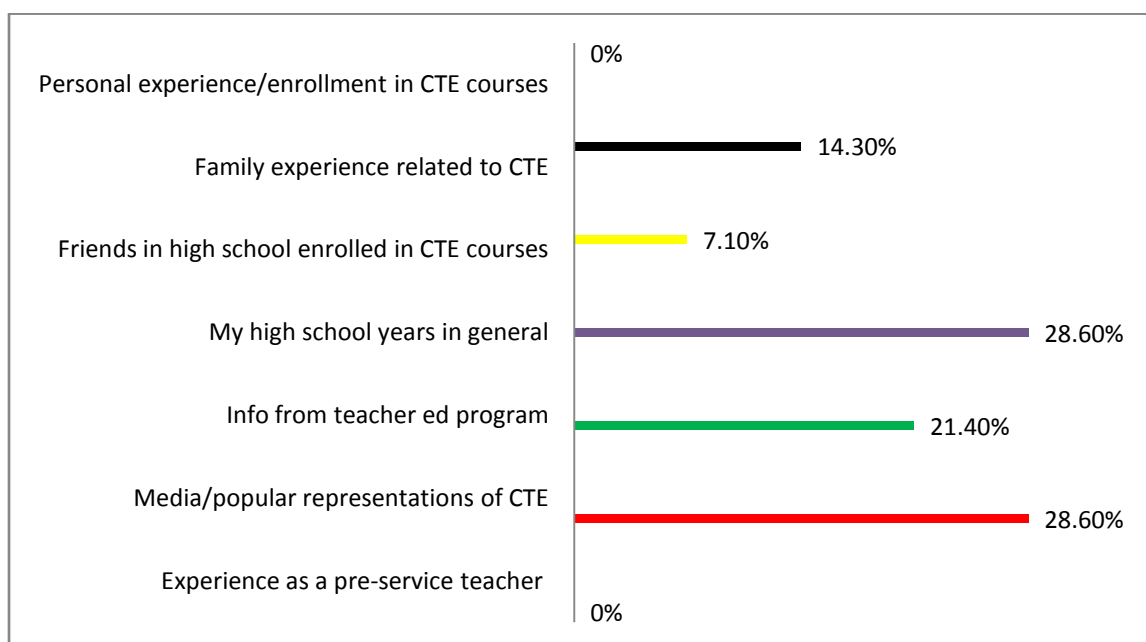


Figure 4-18: Sources of Instructor Roles Knowledge:

Private, Focused Charter or Magnet School Graduates

Framing Chapter Four's Findings

In this concluding section, I will summarize findings according to what the data suggest in relation to the three research questions. For the sake of efficiency, I have organized the subsets within this section to reflect the three research questions. Observations may, however, span across groupings (programs, students, instructor roles, sources of knowledge etc.).

Question One: CTE Programs

According to the data, research participants seem to have a basic awareness of the fundamental core of career and technical education. Virtually all of them identified CTE as being an open-enrollment educational program that is largely based on goal driven and hands-on

instruction. Basic awareness, however, does not necessarily denote *understanding*, as evidenced by nearly eight out of 10 participants indicating they perceived CTE to be outdated. This is a stunning finding, yet somewhat understandable considering a higher percentage of students cited media as their primary knowledge source than personal experience. Moreover, although they exhibited some basic understandings of CTE fundamentals, these pre-service teachers also exhibited some confusion about CTE's place within the landscape of public education; only two out of ten respondents knew that CTE is publicly funded, even as more than 25% agreed that CTE was a *vital part of public education*.

It is also unclear how they perceive the potential for CTE to positively impact high school students. It was particularly confounding that participants strongly suggested that CTE programs could lead to productive post-secondary options, yet, as noted above, deemed those same programs "outdated" and as not being principally significant in the fight against the nation's high school drop-out epidemic. Hence, the perceptions of pre-service teachers about CTE programs are not only clear, but they also are often contradictory and inconsistent.

Question Two: CTE Students

The data suggest that pre-service teachers' perceptions about career and technical education students were also somewhat unclear although some trends were demonstrated. While they correctly rejected the idea that CTE students were typically members of applied classes, respondents were not clear about gender make up, whether students were tracked into CTE, or if they had unique learner needs or interests. An interesting revelation was discovered however: There seemed to be an inclination among participants to view CTE students as unwilling or unmotivated, as opposed to unable.

Question Three: Instructor Roles

Findings related to pre-service teachers' perceptions regarding their future academic instructor roles were much more linear. As students in an academic-oriented teacher prep program, participants indicated a restrained interest in CTE contingent upon non-mandated involvement.

Chapter 5

CONCLUSION

Introduction

This chapter comprises a summary of the study and interpretations of findings reported in Chapter 4. Also included is a section that addresses how this study is personally relevant to me, and a subsequent section addressing the purpose of the study as it relates to three significant categories: CTE Programs; CTE Students; and Instructor Roles. Finally, I identify potential limitations of the study and recommendations for future research and professional actions.

Personal Statement of Relevance

While this study was undertaken in an attempt to make an impact on the field of education, particularly, secondary public education, it has a great deal of personal meaning to me as well. Several personal factors have led to this point. Independent as these factors may seem, they are connected in relation to my interest in CTE.

Patricia McNeil, former assistant secretary for the U.S. Department of Education, has stated that “we have to face the reality that vocational education conjures up in people’s minds an image of something that is not rigorous, that’s preparing people for the jobs of the past, not the future” (Zehr, 1999, p. 27). I was, in fact, one of those people at the time, so I can speak from their vantage point, and more importantly, I hope to return to it with a gospel of CTE possibilities.

I attended a private high school whose academic mission was to produce college-bound scholars. Having been a part of that environment, my pursuits were purely academic and by succeeding at such, my interaction with CTE was limited at best. My gained knowledge as it relates to CTE has resulted in nothing short of an educational epiphany.

Oddly enough, it was a career vested in CTE foundations and skills that afforded me such opportunities. My father has been a certified electrician for 30 years. A few years after high school, he enrolled in an apprenticeship program and went on to earn his electrician's certification. His career has afforded him the ability to provide for his family, as well as, to the surprise of many I'm sure, travel the country and beyond. He has worked in states as varied as Louisiana, Georgia, Illinois, and New York, as well as The Virgin Islands. The point of relevance is that he gained a professional skill-set that has allowed him to find employment virtually anywhere and to earn a salary that is certainly comparable to those of a four-year degree recipient. I really never thought about it as anything other than my Dad's job. Come to think of it, most of my family is engaged in vocational professions.

Even though to some extent, I've been surrounded by people who represent the best of CTE my entire life, it was my first professional appointment, as an adult, that would send me off in search of something unknown to me at the time: an interest in curriculum studies. My appointment as a special education teacher -- specifically my discontent with the curriculum and its delivery, as well as uncertain student outcomes -- created within me a desire to better understand what people, circumstances, and ideologies influence curriculum and instruction. In search of alternative strategies to make a positive impact on special education students, I began to learn about CTE. In time, I realized that my entire concept of student outcomes was flawed. As with many others, *success*, to me, was erroneously anchored to earning a college degree (Rosenbaum, 2001).

My new-found interest for and appreciation of CTE was validated during my next professional stop as a doctoral student. Through course immersion and on-site visits related to a research project I was invited to join, I began to get a better understanding of how effective CTE efforts could be: focused, well organized and rigorous. I also, informally, observed many CTE students in their academic settings as well.

As a supervisor of academic-oriented pre-service teachers, I spent significant time in secondary public schools watching many of them struggle while instructing certain students. In particular, their struggles pertained to difficulties in establishing connections between academic content and students in “applied” classes. This is certainly not to say that all students in applied classes are CTE students, nor that all CTE students, are in applied classes, but in some instances I witnessed there were significant numbers of CTE students in the classes where my pre-service teachers exhibited difficulties. These situations began to prompt my thought about how develop a study that might, one day, lead to improved instruction and outcomes for CTE students.

Purpose of Study

The purpose of this study was to investigate pre-service teachers’ perceptions and attitudes toward career and technical education (CTE). In an effort to acquire this information, I focused on three categories determined relevant by myself and my dissertation committee members: CTE programs, CTE students, and (academic) instructor roles. In this section, I will briefly explain the rationale for selecting each category. My actual research questions were:

- 1) What are pre-service teachers’ perceptions and attitudes about CTE *programs* in general?

- 2) What are pre-service teachers' perceptions and attitudes about CTE *students*?
- 3) What are pre-service teachers' perceptions and attitudes regarding their academic *instructor roles*?

While they exist as three distinct questions, I created these groupings due to their connectivity and potential to provide an understanding of the main research question: what are pre-service teachers' perceptions and attitudes toward CTE?

Review of Findings

This section will serve as a review of findings reported in chapter four with respect to the four major headers, programs, students, instructor roles and sources and level and knowledge. Additionally, the findings related to high school type, the only demographic to register as statistically significant, will be reviewed.

CTE Programs

The data indicated that the study participants were inconsistent in their perceptions of CTE programs. They demonstrated marked confusion about not only the position of CTE within the space of "public" education but also about the effects of CTE on student outcomes (i.e., post-secondary options, drop-out rate). Lastly, they exhibited uncertainty about how students become involved in CTE programs.

CTE Students

As with CTE programs, the data show inconsistencies about pre-service teacher perceptions related to CTE students, especially with regard to how students become involved in CTE (i.e., tracking, applied course affiliation). Also, participants indicated they were much less sure of CTE students' willingness to complete academic tasks as compared to their ability to complete those tasks.

Instructor Roles

The data show that pre-service teachers were somewhat receptive to the idea of CTE curriculum exploration within their teacher preparation programs as well as in the form of professional development. Support for such engagement dropped, however, as the level of required commitment increased.

Sources and Level of Knowledge

According to the data, the vast majority of students were split between sketchy knowledge or about average knowledge about CTE compared to their certification peers. However, comprehensive public high school students did indicate greater confidence in their knowledge about CTE than did their peers from private, focused charter, and magnet schools. The data also show that, in general, pre-service teachers acquired their knowledge about CTE from their high school years in general. Graduates of private, focused charter, and magnet schools indicated a higher likelihood to have gathered their knowledge from media sources.

High School Type

The data show a statistically significant difference in perceptions of CTE based upon the demographic of high school type. Those participants graduating from comprehensive public high schools were consistently more knowledgeable about CTE than their counterparts from private, focused charter, and magnet schools.

Discussion

Within this section, I will discuss those aspects of the study that I found most relevant. The first perception that was revealed within the data that really captivated me was that while correctly judging CTE as being hands-on and goal-driven, participants indicated it was outdated. This difference emerged based on my comparative analysis of three items. I find this conflict captivating because, quite honestly, I assumed that correct identification of these two basic principles of CTE would correlate to a more optimistic view of CTE. Why would a program that provided goal-driven, hands-on education be viewed as outdated when so much of these participants' own teacher preparation, regardless of their different certification areas, is both goal(standards)-driven and hands-on in nature?

Eventually I realized that I was approaching this puzzle all wrong. Just because respondents associated goal-driven, hands-on practice with CTE didn't mean that CTE had ownership, in their minds, over these practices. A comparable analogy would be that just because someone likes music and socializing does not mean that they would be fond of attending concerts.

Instead, my respondents were saying, “Sure, we get it. CTE employs goal-driven, hands-on practice.....within an outdated program.” This is akin to saying, “Sure, I get it. There will be great music and socializing.....at an over-priced, cramped concert.” The issue in their minds seems to be with CTE programming, *not* with goal-driven, hands-on practice. I was asking the wrong question.

My question should *not* have been why anyone would call goal-driven, hands-on education outdated. Instead, my question should be how anyone could have current knowledge of CTE programming and call *it* outdated. Further contemplation led to an answer in the form of another question: Why did I assume these pre-service teachers had current knowledge about CTE? These data provide evidence of individuals holding on to confused and antiquated perceptions of CTE. While unfortunate, this conclusion is not surprising, considering so few of the participants had *first-hand*, experiential knowledge of CTE programs. Even amongst comprehensive public education graduates, who exhibited greater knowledge than their private, focused charter, and magnet school peers, first-hand experience was virtually non-existent. Such uninformed perceptions are sobering, as they speak directly to the types of image and perception problems the CTE community faces.

Another important finding for me was that participants perceive CTE students as being capable of, but unwilling to perform academic tasks. Perceptions such as these, once again, seem steeped in stereotypes that consistently affect CTE. As someone who served as a pre-service teacher supervisor, this perception supports much of what I saw in the field. Typically, amidst frustration with not quite knowing how to make fluid curriculum adjustments, these same pre-service students would become frustrated and, sometimes, hopeless with respect to successfully addressing the learning needs of CTE students. Unfortunately, while not always the case, I witnessed instances where these pre-service students projected their feelings of hopelessness onto their students. Even when pre-service teachers didn't fall into the trap of blaming students, their

idea of curriculum modification was to simply slow down the instruction; to reduce expectations, not to truly modify curriculum. From these experiences I came to believe that if pre-service teachers had better understandings of CTE students and what they expected, they would seek ways in which academic instruction might be better delivered using CTE-related principles and practices.

Participants also demonstrated a lukewarm reception to the idea of having more exposure to CTE in general through their teacher preparation programs. While they indicated some interest in this idea, it trailed off continually as the requirement for commitment increased. Comparatively, they responded much more affirmatively toward requiring their program to adopt requirements concerning special education students when asked a similar question. As noted in Chapter 4, this preference suggests that these pre-service teachers viewed CTE, perhaps, in ways similar to how they might view music, art, or some other elective, rather than an alternative educational program like special education.

Data analysis also shows that of all demographic categories, the type of high school attended was the only variable to prove statistically significant among respondents. Comprehensive public high school graduates consistently demonstrated more accurate perceptions of CTE than their peers from private, focused charter, and magnet schools. Based on my lived experience, as someone who went to a private school, I expected to see this difference. My knowledge of private schools suggests that not only would it be a logistical oddity to attempt to become involved in CTE as a student, but it is just not a part of the curriculum or culture to engage in career and technical education or anything akin to it. After all, such students are being prepared for far more “noble” post-secondary endeavors than vocational or technical careers.

Oddly enough, however, compared to their certification peers, private, focused charter, and magnet school graduates identified themselves as *more* knowledgeable about CTE than their comprehensive high school peers (these results, from Figures 4-8 and 4-9, are reflected below in

Figure 5-1). Considering the sources of knowledge makes this revelation more interesting. While graduates of comprehensive public high schools identified their predominant source of knowledge as “high school-related exposure,” particularly their high school years in general, graduates of private, focused charter, and magnet schools indicated that their leading source of CTE knowledge was what I called “external exposure.” The truly fascinating aspect of this finding is that private, focused charter, and magnet school graduates reported that, indeed, their “knowledge base” regarding CTE students in particular stemmed, in large part, from media (see Tables 5-1 and 5-2).

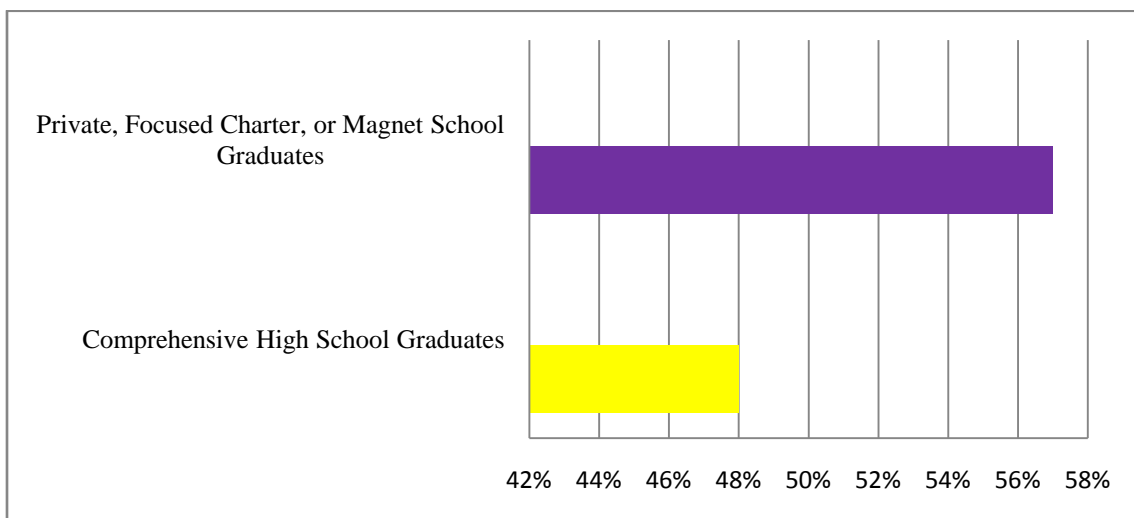


Figure 5-1: Self-Characterization of Average + Comprehensive Knowledge of CTE

Table 5-1: Sources of Knowledge: Private, Focused Charter, or Magnet School Graduates

	Experiential Exposure		High School-Related Exposure		External Exposure		Other
	Personal Experience	Family Experience	High School Friends	High School In General	PSU Teacher Ed. Program	Media	
Program	0.0%	14.3%	7.1%	28.6%	21.4%	28.6%	.0%
	14.3% combined		35.7% combined		50% combined		
Student	0.0%	14.29%	21.43%	21.43%	14.29%	28.57%	.0%
	14.3% combined		42.9% combined		42.3% combined		
Instructor	0.0%	14.3%	7.1%	28.6%	21.4%	28.6%	.0%
	14.3% combined		35.7% combined		50% combined		
Average	0.0%	14.3%	11.9%	26.2%	19.03%	28.6%	.0%
	7.2% combined		19.1% combined		23.8% combined		

Table 5-2: Sources of Knowledge: Comprehensive Public School Graduates

	Experiential Exposure		High School-Related Exposure		External Exposure		Other
	Personal Experience	Family Experience	High School Friends	High School in General	PSU Teacher Ed. Program	Media	
Program	4.4%	8.9%	32.2%	38.9%	7.8%	5.6%	2.2%
	13.3% combined		71.1% combined		13.4% combined		
Student	2.2%	5.6%	32.2%	43.3%	4.4%	6.7%	5.6%
	7.8% combined		75.5% combined		11.1% combined		
Instructor	3.3%	4.4%	14.4%	46.7%	11.1%	8.9%	11.1%
	7.7% combined		61.1% combined		20% combined		
Average	3.3%	6.3%	26.3%	43%	7.8%	7.1%	6.3%
	4.8% combined		34.7% combined		7.5% combined		

This admission is quite troubling, considering that the typical portrayal of all-things CTE/vocational education in contemporary media is one of goof-offs and miscreants at worst and disinterested but otherwise “nice” slackers at best. Digging into my own frame of reference for CTE media imagery, two examples stand out.

One such example is found in the 1985 film, *The Breakfast Club*. Writer/director John Hughes' seminal work, and ode to high school, includes a representation of a vocational education/CTE student that is all-too-common (and negative). Although nearly 25 years-old, *The Breakfast Club* has established a cult following, cementing its relevancy in U.S. pop culture. *The Breakfast Club* is ranked the number one "best high school movie of all time" by *Entertainment Weekly* in its rating of 50 such films, and has been referenced in numerous movies, television shows, and commercials over the years.

In a pivotal scene in the film, three of the lead characters, Claire Standish, John Bender, and Brian Johnson engage in the following exchange:

Claire: What's wrong with you? Why don't you like yourself?

Brian: 'Cause I'm stupid... 'cause I'm failing shop. See, we had this assignment, to make this ceramic elephant, and um--and we had eight weeks to do it and we're s'posed ta, and it was like a lamp, and when you pull the trunk the light was s'posed to go on. My light didn't go on; I got an F on it. Never got an F in my life. When I signed up, you know, for the course I mean, I thought I was playing it real smart, you know. 'Cause I thought, I'll take shop; it'll be such an easy way to maintain my grade point average.

Bender: Why'd you think it'd be easy?

Brian: Have you seen some of the dopes that take shop?

Bender: I take shop. You must be a fuckin' idiot!

Brian: I'm a fuckin' idiot because I can't make a lamp?

Bender: No, you're a genius because you can't make a lamp.

Brian: What do you know about Trigonometry?

Bender: I could care less about Trigonometry.

Brian: Bender, did you know without Trigonometry there'd be no engineering?

Bender: Without lamps, there'd be no light.

Largely a critique of high school archetypes, Hughes plays upon the common (mis)perception of CTE students as "dopes" and intellectual inferiors. Brian's presumption (as an academic student) that taking vocational education/CTE courses is an easy way to maintain his high GPA is such an example, as is his dismissal of the skills that were embedded in the activity (electrical wiring, artistic representations, etc.). In fact, his inability to generate a properly-operating lamp based on

project-specific guidelines, in Brian's mind, makes him "stupid." When questioned about these statements by Bender (a "shop" student, himself), Brian indicates that the course was obviously easy, based on his assessment of the students in such courses as "dopes," not realizing that Bender is one of these presumed "dopes."

Brian later condescendingly asks Bender what he knows about trigonometry and the association between trigonometry and engineering, in an apparent effort to paint Bender as a "dope" and to establish the superiority of trigonometry (the more sophisticated pursuit) over "shop." Bender, with his response, shows that he not only understands Brian's association but is able to bring it back to "real life." Their conversation brings to mind an eloquent and insightful quote from former Secretary of Health, Education and Welfare, John W. Gardner. In 1962, the year immediately preceding the influential Vocational Education Act of 1963 (see Chapter 2), Gardner stated:

We must learn to honor excellence in every socially accepted human activity, however humble the activity, and to scorn shoddiness, however exalted the activity. An excellent plumber is infinitely more admirable than an incompetent philosopher. The society that scorns excellence in plumbing because plumbing is a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water. (St. Louis Dispatch, 2002, p. B16)

In the above exchange, the character of Bender more than aptly defends himself as a "doer" and a "thinker," yet nonetheless, he still represents most of the commonly held (mis)perceptions of CTE students. In fact, Bender is labeled a "criminal" at the end of the film.

Another, more contemporary, example of negative perceptions of CTE within media comes from, multi-million unit selling rapper/producer, Kanye West. His 2005 release, *Late Registration*, which received substantial critical acclaim, including five Grammy nominations (he won three), ranked number one on Billboard's album chart and sold over 860,000 units in its first

week alone (mtvasia.com, 2005). On the signature track, *Late*, Mr. West offers this commentary about high school in general and CTE in particular:

They said the best classes go to the fastest.
 Sorry Mr. West there's no good classes,
 and that's what yo ass get.
 Not even electives, not even prerequisites?
 You mean I missed my major by a couple of seconds?
 Now I'm in the shop class or the basket-weaving,
 with all the rest of the mo'er fuckers underachieving.

Man, this is an insult.
 I went to junior high with all of them
 and they been slow.

These lyrics are ripe with disregard for career and technical education. From the inference that the “good classes go to the fastest” and his tardiness relegating him to something less than “good,” to his overt association of “shop class” (read CTE) with “basket weaving,” the commentary here is scathing. Most indicting, however, is the assertion that students in such courses are “underachieving” and “slow.” Even more stinging, perhaps, is the proclamation that for him to be associated with these students scholastically is, by nature, “an insult.”

The references to Mr. Hughes’ and Mr. West’s work in relation to this study are not intended as a personal slight, but as examples of the types of imagery that are promulgated about CTE in youth-oriented popular media. In fact, in fairness to Mr. West, I should note that he does philanthropic work through his Kanye West Foundation that is dedicated to utilizing the arts as a means of keeping kids in school.

Once again, while I was not terribly surprised that most private, focused charter, and magnet school graduates reported acquiring their knowledge about CTE through the media, it was no less sobering to have my presumption affirmed. This fact is certainly not good news for CTE proponents and indicates that the long fought battle of public perception is not nearly as close to being won as we would hope. These images linger in the public consciousness in the most

pervasive ways imaginable, but they do not, in any way, reflect the many intelligent, focused, and hard-working kids I encountered during my time observing CTE classrooms.

Limitations of Study

Based on my initial analysis, I have identified at least two limitations to this study. The first area pertains to the sample population, specifically, its size and nature. The second area of potential limitation is the research instrument utilized within the study. The standard for highly reliable statistical accuracy was met within only one of the three instrument categories, with the other two reaching acceptable reliability standards. Also, there was potential for misunderstandings, on the part of study participants, in relation to some language that was used within the questionnaire. Such limitations make it difficult to generalize beyond this study (Urda, 2005). The following sections detail these critiques of the study and explore methods of strengthening both areas of limitation.

Questionnaire Language

As a possible limitation to this study, I'd like to acknowledge the possibility that study participants may have interpreted language within the questionnaire differently from how it was intended.

Size and Nature of Sample

Given the purpose of this study, to investigate pre-service teachers' perceptions and attitudes toward career and technical education, the size and nature of the research sample could be considered a limitation. The typical respondent within this sample population can be described as a 22 year-old suburbanite from a middle-class family who graduated in the top quartile from a comprehensive high school along with 370 other seniors four years prior to completing this questionnaire. All respondents also came from the same institution during the same semester. Although the study did produce some important findings, a larger and more diverse sample population would strengthen the case for broad recommendations to the field. Using size and diversity as the measuring tools by which I would judge sample population improvement, I offer two ways, in particular, that this limitation can become a strength.

One way to improve the size and diversity of the sample population would be to incorporate institutions from a wider dispersion of the country. An example of successfully securing such a varied sample might be to solicit participants from various universities based on accreditation body and regional dispersion. For example, the participants in this study are from an institution accredited by the Middle States Association, a regional accrediting organization which is recognized by the Council for Higher Education Accreditation (CHEA), a nationally recognized accreditation oversight body. There are seven such regional accreditation organizations recognized by CHEA. Securing participants from each of these regional accreditation bodies would strengthen the size and diverse nature of the research sample.

There are many ways to replicate such tactics. CHEA also recognizes programmatic accrediting organizations. One such example, particularly relevant to this study, would be the National Council for Accreditation of Teacher Education (NCATE). The teacher preparation program associated with this study is accredited by NCATE. The stated mission of this

organization is to help establish high quality teacher education preparation. NCATE currently accredits over 600 colleges of education throughout the country. Securing participants from within this pool would also serve to strengthen the size and diverse nature of the research sample.

A different approach to improving the size and nature of the sample population would be to solicit participation based on university types. An example of such a method might include selecting universities from across groupings within the Carnegie Classification of Institutions of Higher Education. The Carnegie classification model is based upon three fundamental questions: what is taught (Undergraduate and Graduate Instructional Program classifications), who are the students (Enrollment Profile and Undergraduate Profile), and what is the setting (Size & Setting). Utilizing this technique would, once again, address limitations of size and diverse nature of the research sample.

Strength of Questionnaire

The questionnaire, while acceptable for a first generation instrument based upon the work of Guilford (1973), could have been more effective as it relates to statistical reliability. According to Hair, Anderson, Tatham, and Black (1998), the alpha should exceed 0.7 thresholds to be highly reliable; lower than 0.3 indicates low reliability. Guilford indicated that scores of 0.35 through 0.7 are acceptable for a first generation instrument. Among the three categories of questioning within this study, two (program knowledge and student knowledge) rated as acceptably reliable and one (instructors role) rated highly reliable.

I have identified three measures related to strengthening the research instrument. The first action would be to add additional items, increasing the frequency of certain types of questions. For instance, I might ask more questions about the ability of CTE programs to

positively affect student outcomes, imploring different language each time. The second fortifying measure, which complements the first, would be to increase the sophistication of the instrument in a manner that allowed for more cross-categorical analysis. For example, I could ask different versions of questions related to student outcomes in all three sections.

A model of such questioning might go as follows: an item in the CTE programming section might ask if participants agreed or disagreed that CTE programs provide the necessary skills for successful post-secondary educational accomplishment; an item in the CTE students section might ask if participants agreed or disagreed that CTE students exhibited the aptitude to be successful in post-secondary educational settings; finally, an item in the instructor's role section might ask if participants agreed or disagreed that CTE and academic curriculum integration increased the likelihood of post-secondary educational success for CTE students. Such a series of questioning, would not only allow for meaningful findings within their respective categories, but it also would bolster the opportunities for significant analysis across categories.

The third suggestion is to distribute the same questionnaire to individuals who are at a similar juncture to these study participants, albeit, within CTE teacher preparation programs. As is, the study seeks to investigate perceptions of pre-service teachers with the assumption that their knowledge of CTE is less-than adequate. This position implies that such misperceptions are unique to academic-oriented pre-service teachers. Collecting data from individuals working toward CTE certification would allow me to speak from a data-driven perspective rather than an assumptive perspective.

Another potential limitation is the possibility of misinterpretation of language by study participants. An example might be the use of the term "hands-on" in item 18 of the questionnaire. The term, "hands-on," is interpreted by some to represent psycho-motor skills. In this questionnaire, "hands-on" has greater meaning. In addition to psycho-motor skills, here, "hands-on" speaks of the demonstration of knowledge acquisition and content (including

academics) mastery through applied work (Lewis, 2005; Napoleon, et al, 2006; Zirkle, 2004).

Another example of a concept subject to such a misinterpretation is the use of the term “publicly funded” in item 17 of the questionnaire. One way of averting such misinterpretations may have been to hold a more extensive question and answer period with study participants. I did allow participants to read through the instrument and ask question (which some did) but I did not formally operationalize all terms to the entire group.

Recommendations

The following sections make recommendations for future research and recommendations to the field based on findings of the study. The audience, or field, as it relates to these recommendations is anyone with a vested interest in secondary public education.

Recommendations for Future Research

Recommendations for future research are heavily influenced by acknowledgements of study limitations and subsequent exploration of ways to improve upon the study. Given such observations, I have two specific recommendations for future research. First, I would recommend replicating this study with research sample and research instrument accommodations, as per my above suggestions, in an effort to increase the reliability and generalizability of findings.

The second recommendation would be to conduct a study which investigated similar perceptions of teacher preparation program administrators and instructors, while, once again, incorporating the suggestions regarding sample population and research instrument limitations.

Gathering such information might prove critical in the development and implementation of some strategies that I recommend to the field below.

Recommendations to the Field

Based on the findings of this study, I have three recommendations to the field. The first is to create a course, within academic teacher preparation programs, that highlights alternative and specialized programs within the field of education. Such a course might introduce principles and basic information about CTE, special education (including “gifted” education), home-schooling, charter schools, GED programs, Montessori schools, and alternative schools for “at risk” youth.

Alternatively, a second recommendation is to include, within academic teacher preparation programs, instructional modules pertaining to alternative education generally or CTE specifically. Such modules might comprise readings, media-related resources, and an accompanying seminar which includes a speaker familiar with CTE. This person could be a member of the university or a member of the community who is involved with a local career and technical education center.

A third option is to provide on-site professional development and/or in-service opportunities for secondary education instructors. While I certainly advocate such opportunities, I do not believe they should preclude either of the two previously suggested additions within academic teacher preparation programs. My argument in favor of action at the teacher preparation program level is that making accommodations while individuals are in professional preparation -- as opposed to doing so when they are actually (practicing) professionals -- is more

likely to address *developing* perceptions and practices as opposed to attempts at *changing* perceptions and practices.

Each of these recommendations is made with the hope of doing one thing: potentially improving high school student outcomes. There are two specific ways I imagine these recommendations leading toward such an end, and each is tied to performance improvement. First, I imagine that, as a result of the afore-mentioned recommendations, the instruction of pre-service teachers (as future academic instructors) and current academic instructors, alike, would expand and improve. A better understanding of CTE and how academics can be infused within CTE programming might provide ways for academic instructors to imagine using CTE-related content to make meaningful connections between their content and the students they are charged with teaching. Using such strategies might also alleviate academic instructors of some of the frustrations that accompany their current unsuccessful attempts to make such meaningful connections.

The second way that I imagine adoption of my recommendations proving useful is related to overall student performance improvement. Students, specifically CTE students, respond very well to instruction that is rooted in “real-world” foundations (Ain, 2006; Zrikle, 2004). If academic instructors were familiar enough with CTE concepts to demonstrate (through said concepts) the relationship between academic coursework and the “real-world,” CTE students might be more interested in and likely to invest themselves in that coursework. More interested and invested students, presumably, would lead to improved performance based upon the increased effort that comes with interest and investment. Whether the improved performance is drastic or incremental, improvement remains the goal

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Appendix A

Research Instrument

Part One: Demographic Information

Direction: Please provide demographic information by answering the following questions.

- 1) Male _____ Female _____
- 2) Age _____
- 3) I would describe my hometown as (please select **one** of the following).
 - a. _____ Urban
 - b. _____ Suburban
 - c. _____ Rural
 - d. _____ Other (please specify) _____
- 4) I would describe my family's socio-economic background as (please select **one** of the following).
 - a. _____ Upper-class
 - b. _____ Middle-class
 - c. _____ Lower-class
 - d. _____ Other (please specify) _____
- 5) I would describe my high school as (please select **one** of the following).
 - a. _____ Comprehensive public
 - b. _____ Private
 - c. _____ Focused Charter or Magnet
 - d. _____ Other (please specify) _____
- 6) The number of students in my high school graduating class was _____. (estimate if necessary)
- 7) I would describe my standing within my high school graduating class as (please select **one** of the following).
 - a. _____ Top quartile
 - b. _____ Second quartile
 - c. _____ Third quartile
 - d. _____ Bottom quartile

- 8) I would describe my teaching certification area as (please select **one** of the following).
- _____ Social Studies (SSED)
 - _____ Science (SCIED)
 - _____ Math (MTHED)
 - _____ English (LLED)
 - _____ World Language (WLED)
 - _____ Other (please specify)_____

Part Two: Pre-service Teachers' Understanding of CTE Programs

Directions: The purpose of this survey is to gather your thoughts about career and technical education (CTE) programs. You may also be familiar with CTE through terms like vocational or vo-tech education. There are no right or wrong answers. Answer freely and in a manner that best reflects your thoughts.

Please identify the extent to which you agree or disagree with the following statements. **Circle your response:**

Agree Strongly (AS) - Agree Partially (AP) - Don't Know (DK) - Disagree Partially (DP) - Disagree Strongly (DS)

- | | | | | | |
|---|----|----|----|----|----|
| 9) CTE is focused and goal driven. | AS | AP | DK | DP | DS |
| 10) CTE is open to all students. | AS | AP | DK | DP | DS |
| 11) CTE programs can lead to productive post-secondary options. | AS | AP | DK | DP | DS |
| 12) CTE is an outdated relic of yesteryear. | AS | AP | DK | DP | DS |
| 13) CTE instructors are highly trained and certified. | AS | AP | DK | DP | DS |
| 14) CTE is reliant upon student tracking. | AS | AP | DK | DP | DS |
| 15) CTE positively affects the dropout rate. | AS | AP | DK | DP | DS |
| 16) CTE is a vital part of comprehensive public education. | AS | AP | DK | DP | DS |
| 17) CTE programs are publicly funded. | AS | AP | DK | DP | DS |
| 18) CTE is highly driven by hands-on application. | AS | AP | DK | DP | DS |
- 19) Most of what I know about **CTE programs** I know from (please select **one** of the following).
- _____ personal experience/enrollment in CTE courses.
 - _____ family experience related to CTE.
 - _____ friends during high school who were enrolled in CTE courses.
 - _____ my high school years in general.
 - _____ information I've encountered in my teacher education program at PSU.
 - _____ media/popular representations of CTE.
 - _____ other (please specify)_____

Part Three: Pre-service Teachers' Understanding of CTE Students

Please identify the extent to which you agree or disagree with the following statements. **Circle your response:**

Agree Strongly (AS) - Agree Partially (AP) - Don't Know (DK) - Disagree Partially (DP) - Disagree Strongly (DS)

20) Generally speaking, most students are placed in CTE programs based upon test scores and/or academic tracking practices within high schools.

AS AP DK DP DS

21) Generally speaking, CTE students have a unique set of learner needs.

AS AP DK DP DS

22) Generally speaking, CTE high school students are typically members of applied (i.e., lower track) high school classes.

AS AP DK DP DS

23) Generally speaking, CTE students have post-secondary education aspirations.

AS AP DK DP DS

24) Generally speaking, CTE students demonstrate age-appropriate academic achievement.

AS AP DK DP DS

25) Generally speaking, CTE students are able to complete "academic" classroom tasks.

AS AP DK DP DS

26) Generally speaking, CTE students are willing to complete "academic" classroom tasks.

AS AP DK DP DS

27) Generally speaking, CTE students are overwhelmingly male.

AS AP DK DP DS

28) Most of what I know about **CTE students** I know from (please select **one** of the following)

a. ____ experience as a pre-service teacher.

b. ____ personal experience/enrollment in CTE courses.

c. ____ family experience related to CTE.

d. ____ friends during high school who were enrolled in CTE courses.

e. ____ my high school years in general.

f. ____ information I've encountered in my teacher education program at PSU.

g. ____ media/popular representations of CTE.

h. ____ other (please specify) _____

**Part Four: Pre-service Teachers' Understanding of
Academic Instruction/CTE Relationships**

Please identify the extent to which you agree or disagree with the following statements.

Circle your response:

**Agree Strongly (AS) - Agree Partially (AP) - Don't Know (DK) - Disagree Partially (DP) -
Disagree Strongly (DS)**

29) Students in certification programs like yours should take courses that address CTE principles while in teacher prep programs.

AS AP DK DP DS

29) Students in certification programs like yours should demonstrate CTE competencies as a program requirement.

AS AP DK DP DS

30) Students in certification programs like yours should demonstrate special education competencies as a program requirement.

AS AP DK DP DS

31) Certification programs like yours should incorporate CTE-themed content into their curricula.

AS AP DK DP DS

33) Academic education high school instructors like you should work with CTE instructors to modify their curriculum.

AS AP DK DP DS

34) Academic education high school instructors like you should understand that a key feature of public education is the variety of interests and learning styles of students.

AS AP DK DP DS

35) Academic education high school instructors like you would benefit from CTE-themed professional development programs.

AS AP DK DP DS

36) Most of what I know about **academic instructor roles in CTE**, I know from (please select **one** of the following).

- a. ____ experience as a pre-service teacher.
- b. ____ personal experience/enrollment in CTE courses.
- c. ____ family experience related to CTE.
- d. ____ friends during high school who were enrolled in CTE courses.
- e. ____ my high school years in general.
- f. ____ information I've encountered in my teacher education program at PSU.
- g. ____ media/popular representations of CTE.
- h. ____ other (please specify) _____

- 37) Compared to other pre-service teachers in my certification area, I would characterize my level of knowledge (as distinct from my opinions, beliefs, and attitudes) about CTE as (please select **one** of the following).
- a. ____ Comprehensive
 - b. ____ About average
 - c. ____ Sketchy at best
 - d. ____ Virtually non-existent

Thank you for your participation!

Appendix B

Informed Consent Form



Informed Consent Form for Social Science Research (IRB# 2984)
The Pennsylvania State University

Title of Project: Pre-Service Teachers' Perceptions and Attitudes
Toward Career and Technical Education

Principal Investigator: Larry Napoleon, Jr., Graduate Student
222 Chambers Building
University Park, PA 16802
(814) 863-4500; lxn138@psu.edu

Advisor: Dr. J. Dan Marshall
204E Rackley Building
University Park, PA 16802
(814) 865-2239; jdm13@psu.edu

1. **Purpose of the Study:** The purpose of this research study is to explore how pre-service teachers think about career and technical education.
2. **Procedures to be followed:** You will be asked to answer questions about your thoughts as they pertain to career and technical education (CTE). The questions will be asked via a 37-item survey.
3. **Benefits:** You might learn more about yourself by participating in this study. You might have a better understanding of how you perceive career and technical education. You might also gain a better understanding of how you perceive your role in regards to career and technical education as an academic instructor.
4. **Duration:** It will take about 20 minutes to complete the survey.
5. **Statement of Confidentiality:** Your participation in this research is confidential. The data will be stored and secured at 222 Chambers Bldg. in a locked file. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

6. **Right to Ask Questions:** Please contact Larry Napoleon at (814) 863-4500 with questions, complaints or concerns about this research.
7. **Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

You must be 18 years of age or older to take part in this research study. Completion and return of the survey is considered your implied consent to participate in this study. Please keep this form for your records.

VITA

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Education

- Doctor of Philosophy in Education
The Pennsylvania State University – University Park, PA 2009
Specialization: Curriculum & Instruction
Minor: Workforce Education
- Master of Arts in Education
Xavier University – New Orleans, LA 2003
Specialization: Curriculum & Instruction/Special Education
- Teaching Certification
Xavier University – New Orleans, LA 2002
Certification area: K-12 Special Education
- Bachelor of Education
Dillard University – New Orleans, LA 1998
Specialization: History
Minor: Political Science

Professional Appointments

- Graduate Assistant/Instructor 2004-2009
Department of Curriculum & Instruction, College of Education
The Pennsylvania State University, University Park, PA
- Classroom Teacher 1998-2003
Special Education Teacher
Orleans Parish Public School System, New Orleans, LA

Publication

- Napoleon, L. and Freedman, D. and Seetharaman K. and Sharma, P. (2006). “An Educational Needs Assessment of Pennsylvania Workforce: Opportunities to Redefine Secondary Career and Technical Education to Meet Food Industry Needs”. *Journal of Food Science Education* Vol. 5 p.19

Presentation

- Napoleon, L. (2009, February). “What is the Role of Career and Technical Education (CTE) Within Our Democratic Society?” Presented at the New DEEL Conference at Temple University, Philadelphia, PA