

# Differences Between General and Talented Students' Perceptions of Their Career and Technical Education Experiences Compared to Their Traditional High School Experiences

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Career and Technical Education (CTE) has existed as a federally funded program in various forms since the passage of the Smith-Hughes Act of 1917. CTE has evolved over time from the more general vocational education courses of wood, metal, and auto shop to include topics such as criminal justice, education, and medical sciences. The goal of CTE is to prepare students for postsecondary careers upon graduation from high school or college. First and foremost, CTE involves high school and college education that provides students with subject matter

Career and technical education represents an important and understudied educational option for high school students. This qualitative study utilized data from one exemplary career and technical education (CTE) center to address the question of how talented and general education students' part-time CTE experiences differed from their traditional high school experiences. The secondary students in this study simultaneously attended both the CTE center and a traditional high school. Through interviews with students, a trend emerged: students explicitly compared these two educational experiences. Both talented and general students commented favorably on their CTE experiences and negatively on their traditional high school experiences. The four major themes from their comments included autonomy; effective, caring teachers; students with similar interests; and relevant content in an applied setting. Students appreciated the ability to choose courses and determine the order or type of assignments, to self-pace the curriculum, and to experiment with a profession (autonomy). They also commented on the presence of teachers who had high expectations, sought student's strengths, showed personal interest in the students, and had professional experience (effective, caring teachers) in the CTE setting. The student's perspectives included the observation that at the CTE center they were exposed to other students who demonstrated mature and committed behaviors, showed interest in their course of study, and participated in Career and Technical Student Organizations (students with similar interests). Finally, the learning environment at the CTE center offered curricular connections to the profession, hands-on learning, and professional treatment of students in a job-like setting (relevant content in an applied setting).

## Summary

taught in context, employable skills, and educational pathways (Association for Career and Technical Education, 2007).

In this study, we examined data from an exemplary CTE center. Specifically, we examined qualitative responses from students identified as talented in their areas of CTE study and compared these responses and generative themes to those from general education students enrolled in the same CTE center. All students who attended the center also simultaneously attended a traditional high school for half of the day. Themes emerged from the data that provided insights concerning how gifted and general students viewed both their CTE and traditional high school experiences. These insights offer educators in both settings information concerning how they might effectively connect with their students and connect their students to the learning environment.

## Theoretical Framework

### *Career and Technical Education*

Students benefit from CTE in several ways. First, Stone (2004) found that students who engaged in a CTE program of study enrolled in more rigorous academic coursework and in more high-level math classes than did comparable groups of general education students. Castellano, Stone, Stringfield, Farley, and Wayman (2004) found that students involved in schools with CTE reforms fared better in science and English courses than students in traditional high school settings. Further, senior “occupational concentrators,” (i.e., students who had completed several related CTE courses), showed increases on National Assessment of Educational Progress (NAEP) scores of 8 points in reading and 11 points in math as compared to only 4 points in reading and no increase in math for a comparable sample of general education students (National Assessment of Vocational Education [NAVE], 2004). A balance of one CTE credit to every two academic credits has also been shown to minimize the

risk of dropping out of high school (Plank, 2001). Clearly, CTE participation has some tangible benefits.

Some authors have discussed negative perceptions that surround CTE (e.g., Cohen & Besharov, 2002; Gray, 2004; Stone 1993). However, these negative perceptions may be more a remnant of the past than a reflection of current views regarding CTE. Recently, student perceptions concerning CTE have improved (Gaunt & Palmer, 2005). This could in part be due to the fact that approximately 60% of CTE students now enter postsecondary education, similar to the 72% of students who enter from specific college-prep programs (Gray, 2004). Despite the recent emphasis on academic rigor in the traditional subject areas of math, science, and English from the No Child Left Behind Act (NCLB; 2001), student enrollment in CTE courses has increased by as much as 157% in the 5-year period from 1999 to 2004 (United States Department of Education Office of Vocational and Adult Education, 2005). As Gray (2004) noted, "The present levels of student participation in and local support of CTE alone suggest that perhaps it [CTE] is not as obsolete as [some have] claimed" (p. 129).

A recent study by Gaunt and Palmer (2005) focused directly on student perceptions of CTE programs within the same Midwestern state as the center in the present study. A total of 451 students from seven school districts representing general and CTE courses completed surveys aimed at investigating their perceptions of CTE programs. The authors found that 80% of CTE students and more than 50% of non-CTE students believed CTE was appropriate for college-bound students. Further, 78% of CTE and 79% of non-CTE students agreed that CTE was suitable for students of all ability levels. Finally, students in this study indicated that friends, parents, and the opportunity to receive high school credit waivers or college credits most influenced their decision to enroll in CTE courses.

The pedagogical strategies employed in CTE are similar to those described in the National Science Education Standards (National Research Council, 1996). These standards emphasize learning through inquiry, hands-on learning, and process skills

development, with each major standard linked to real-world applications. In his brief on the connection between CTE and science education, Maurer (2000) discussed the importance of the “real-world application of science learning” through the integration of academic and CTE courses (p. 3).

### *Gifted Students in CTE*

Despite the United States Department of Education (1993) statement that suggested “gifted and talented students exist in all areas of human endeavor” (p. 3), gifted students are often overlooked when it comes to vocational talents or interests (Greenan, Wu, & Broering, 1995). In the past, CTE programs were simply not offered to gifted and talented students (Curtis, Justice, & Curtis, 1980). Despite positive perceptions of CTE (Gaunt & Palmer, 2005), gifted students are still not routinely encouraged to consider enrolling in CTE programs or courses (Gentry, Rizza, Peters, & Hu, 2005; Greenan et al., 1995). This is likely due to the fact that programs for gifted and talented students at the secondary level tend to revolve around accelerated or AP academic course work (National Association for Gifted Children, 2005). Gifted students tend to have wide-ranging areas of interests that reach beyond typical academic coursework (Renzulli, Gentry, & Reis, 2004). Including CTE in a continuum of gifted and talented services can provide students with challenging and relevant course material and high levels of technical expertise in a wide range of occupational areas not found in traditional academic offerings (Gentry, Hu, Peters, & Rizza, in press).

Research concerning gifted and talented students *and* CTE is limited, with only a handful of studies in the last 30 years. The National Center for Research in Vocational Education was one of the first organizations to address the issue of gifted students in the vocational areas (Milne, 1982; Milne & Lindekugel, 1976). In his 1982 report, Milne described gifted and talented students as having both interests in a wide range of topics and the desire to pursue their interests. As Dayton and Feldhusen

(1989) explained, “The ‘vocationally’ talented are students who demonstrate exceptional capability within one or more of the vocational program areas. These are students who create with their hands, plan gourmet meals, design clothing, conduct business, or manage farms” (p. 357). In more recent research, CTE students clearly voiced their preference for being challenged and for learning advanced content in a more applied and hands-on environment (Gentry et al., 2005). In fact, in this study, the instructors consistently differentiated curriculum and instruction for students of all ability levels. Sense of community, professionalism, and a reason to learn were reported by students and staff at the center. Further, Gentry et al. (in press) studied students identified as talented in a CTE setting. They concluded that the themes of individualization; instructors as developers of talent; student-centered, meaningful choices; and student involvement in content-based, extracurricular activities paralleled practices recommended in gifted education. CTE offers an alternative educational setting in which students’ strengths and talents may be recognized and actualized.

## Purpose

In this study, we sought to learn from the students who simultaneously attended an exemplary CTE center and a traditional high school. We wanted to understand the different perceptions of general students and talented students in each of these settings. In addition, we examined whether CTE programs offered possible solutions for effectively educating general education and talented students. At the research site, both groups of students attended a traditional high school for half of the day and the CTE center for the other half. CTE instructors identified students as “talented.” In short, we hope that the findings of this study can be used to engage more students in meaningful learning experiences at the secondary level.

## Methods and Procedures

This study is the third in a series of investigations of an exemplary CTE center. This center initially emerged as an anomaly from a national sample of secondary schools in a study designed to assess student perceptions of their class activities concerning appeal, challenge, choice, meaningfulness, and self-efficacy. Because it differed dramatically in how students viewed their class activities on these constructs, we studied what occurred at this center that sets it apart from the 26 other schools in the original sample (Gentry et al., 2005).

### *Participants*

More than 800 students attend the CTE center every year. Of the 20 programs available at the center, 9 were sampled for in-depth study, and 6 students from each of these programs were selected and interviewed. Each program manager (i.e., technical education teacher) identified students as talented in the program area using a newly developed nomination procedure describe by Gentry et al. (in press). Program managers selected and rated up to four of their students using a 4-point scale (4=*to a great extent*; 1=*not at all*) on the following seven items: (1) shows outstanding talent in this domain or career pathway when compared to age peers; (2) performs or shows potential for performing at remarkably high levels of accomplishment when compared to others similar in age, experience, or environment; (3) has a desire to work with advanced concepts and materials in this area; (4) is willing to explore new concepts; (5) seeks alternative ideas; (6) actively considers others' values; and (7) often thinks "out of the box." The two students rated the highest by their instructors from each program area sampled were included in the study and referred to as talented students. To ensure a balance of talented and general students, we eliminated any students nominated as talented by the program managers prior to selecting an additional four students from each program area. The remaining four students, whom we refer to as "general" students, were randomly

selected from each of the programs, and their demographics were compared to those of the school population to ensure a representative sample.

The nine sampled programs included (in alphabetical order): auto and diesel technologies (auto/diesel), business services technologies (BST), certified network administrator (CNA), criminal justice, early childhood education (ECE), information technologies (IT), medical technologies (MT), natural resources and agricultural technologies (NRAT), and welding. Due to three absences, a total of 51 interviews were conducted and transcribed, with 16 of the interviewees identified as talented.

Of the 16 students identified as talented in the CTE setting, only two had been identified as gifted by their home school. However, in this rural area, more than half of the schools that sent students to the center had no programming for gifted students. Eleven of the talented students reported that they had taken advanced classes in high school, whereas five enrolled only in general courses and would have been considered average or below average in the context of their high school setting.

The students at the center ranged in age from 14 to 19 years. Most students were juniors or seniors, although some programs were open to sophomores. Males comprised 57% of the sample. As is indicated in Table 1, some programs were dominated by either male (i.e., auto/diesel, certified network administrator, welding) or female (i.e., early childhood education, business services technologies) students. Student distributions by program, gender, and type of student are presented in Table 1.

Thirteen schools sent students to the center. Three member schools (HS1, HS2, HS3) sent the most students to the center because the center is located in their county and provides services to students at no charge. Ten other schools sent students to the center on a tuition basis. Table 2 displays the top seven schools by number of students attending the center, with the remaining six schools combined in the "other" category. Students spent half of the school day at their home school and the other half in their CTE program. Unlike traditional high school courses that students attend for a semester or an academic year, students attend



**Table 1**

Participants by Program, Gender, and Type of Students

Program	Talented		General		Total
	Male	Female	Male	Female	
Auto/Diesel	2	0	4	0	6
BST	N/A	N/A	2	4	6
CNA	2	0	3	1	6
Criminal Justice	1	1	1	3	6
ECE	0	2	0	4	6
IT	1	1	2	0	4
MT	0	2	2	2	6
NRAT	1	1	3	1	6
Welding	2	0	3	0	5
Total	9	7	20	15	51

**Table 2**

Participants by Program and Home High School

Program	HS 1	HS 2	HS 3	HS 4	HS 5	HS 6	HS 7	Other	Total
Auto/Diesel		1	1		2			2	6
BST	4	1				1			6
CNA	4		1				1		6
Criminal Justice	1	3				1		1	6
ECE	4			1				1	6
IT		2		1				1	4
MT	3	1	2						6
NRAT	3		1	1				1	6
Welding	1	4							5
Total	20	12	5	3	2	2	1	6	51

their CTE programs for 2 academic years—usually as juniors and seniors. CTE programs included field experiences and often involved extensive extracurricular activities related to the CTE course of study.

### *Data Collection and Analysis*

Semi-structured interview protocols were used to interview the students, a format that allowed for follow-up questions as needed (see Appendix A). In part, the interview protocol was developed to elicit responses from the students concerning constructs that had been integral in identifying this site as exemplary; namely appeal, challenge, choice, meaningfulness, and self-efficacy. The talented students were asked additional open-ended questions related to their identification as talented and their experiences related to this designation. These interviews lasted between 30 and 60 minutes and were collected during the course of 5 months, on site, by each of the two researchers. Each researcher observed the nine selected programs and created notes on the program, as well as on the targeted talented students and general students in the programs. All interviews were taped and transcribed, and field notes, logs, and documents such as school-improvement plans and program evaluations were compiled to provide a triangulated picture of the data. For the present study, all data were reassembled into a megafile in which each instance of comparison between the CTE center and a high school was included and attributed to the individual making the comparison. In this manner, all data were completely reordered and reanalyzed with the goal of understanding the differences between the two settings and between talented and general students attending the CTE center.

Open, axial, and selective coding of data was completed as suggested by Strauss and Corbin (1990). Axial codes were designed with individual spokes creating a more detailed description of student comments. The use of a research team comprised of two faculty members and a graduate student provided multiple perspectives and observations during the constant-comparative data analyses. Both trends and exceptions were reported as we sought to understand the differences in students' perceptions of the CTE environment and the traditional high school environments. We used content analysis to attribute comments to

emergent themes, as either negative or positive, and to provide the frequency with which students addressed each theme.

## Results

All 16 of the talented students and 33 out of the 35 general students made comparisons between their CTE center and traditional high school experiences. Based on these student comments and perspectives, four major themes emerged: Student autonomy (the ability to choose courses and determine the order or type of assignments, to self-pace the curriculum, and to experiment with a profession); effective, caring teachers (teachers who had high expectations, sought students' strengths, showed personal interest in students, and had professional experience); other students with similar interests (classmates who demonstrated mature and committed behaviors, showed interest in their course of study, and participated in Career and Technical Student Organizations [CTSO's]); and learning relevant content in an interactive, applied setting (an environment that offered curricular connections to the profession, hands-on learning, and professional treatment of students in a job-like setting).

Despite the fact that we did not initially focus on how students' experiences at the CTE center compared to their experiences at their traditional high schools, we noticed a trend in which most students made such comparisons. Further, students generally spoke positively about their CTE center experiences and negatively about their general high school experiences. Table 3 displays the frequency and percentages of comments made by talented and general students regarding each setting by theme.

Negative comments concerning the center and positive comments concerning the high schools were the exception to the trends noted in Table 3. In fact, neither group commented negatively about the CTE center. The talented students made eight positive comments about their home schools whereas the general students made only three.

**Table 3**

Talented and General Student Comments by  
Setting and Theme

Theme	Positive Comments: CTE Center		Negative Comments: High School	
	Talented Students ( <i>n</i> = 16)	General Students ( <i>n</i> = 35)	Talented Students ( <i>n</i> = 16)	General Students ( <i>n</i> = 35)
Autonomy	37 (26%)	17 (20%)	6 (19%)	5 (12%)
Effective, caring teachers	54 (38%)	26 (31%)	5 (16%)	17 (40%)
Students with similar interests	14 (10%)	8 (10%)	5 (16%)	6 (14%)
Relevant content, applied setting	36 (26%)	33 (39%)	16 (50%)	14 (33%)
Total number of comments	141 (100%)	84 (100%)	32 (100%)	42 (100%)

We also note that although we asked additional open-ended questions of the talented students, only 11 comparative comments resulted from these additional questions. These comments were distributed across the four themes. With 173 total comparative comments made by talented students, 11 comments resulted from the additional questions. This accounted for 6% of the total comparative comments.

### *Autonomy*

*Talented Students' Perceptions.* Autonomy or independence existed as a strong trend among programs at the CTE center, and it existed at many levels. Talented students made 37 comparative comments regarding the freedom and autonomy they had at the CTE center that did not exist at their traditional high schools. At the broadest level, students had the freedom to choose their program, a theme mentioned in 15 of the 37 comments on autonomy. The opportunity to explore an area of interest was also a component of autonomy. Tina from IT enrolled in one program that did not respond to her needs. The center allowed

her to move to another program midyear, and she explained, “I enjoy everything that I learn here [at the center] because it’s my choice. At home school it’s boring, and I have no choice” (personal interview, March 10, 2003). Jaime from early childhood education commented, “I wanted to work with kids and came here to see if that was really what I wanted to do.” When asked how she chose the center, she explained, “It’s something a lot of kids should do so they know when they go to college if that’s something they really want to do or not . . . I don’t have to waste a year or two trying to figure out what I want to do” (personal interview, March 3, 2003).

Autonomy-related comments included freedom within the courses, as well as freedom to choose a program of study. Due to the individualized nature of the center, in general, students were allowed to focus on an area of interest without having to spend equal time in other areas. Nine of the 37 comments regarding autonomy mentioned the ability to control the type of assignments and overall order of assignments. Ron, a talented student from natural resources and agriculture technology explained, “I don’t like fish—so I don’t have to be in the aquatics program—but other people do, so they are really into that and are specializing [in it and are] passionate about it and about coming to school” (personal interview, March 5, 2003). Ken from auto/diesel, described the autonomy in his program:

We have a check sheet to be sure we cover everything, and then you can choose what you want to do that particular day. There’s a certain amount of work that needs to be covered every semester, and you have to make sure you’re ahead of that. . . . Some days are easier than others and you have a choice. (personal interview, February 2, 2003)

*General Students’ Perceptions.* We coded autonomy 17 times out of the 84 responses from general students attending the center. Frequently, students made general statements about freedom. “I think the [CTE center] has more freedom than the home school”

(Beth, business services technology, personal interview, March 7, 2003). When asked if the center gave her choices, Alice from early childhood education replied, "Yes, I like it more than [the home school] because they don't give you choices. Every Friday we have projects. . . . They don't do that at the high school" (personal interview, March 4, 2003). Laura from business services technology continued, "I think it's better here because you have more options—you can choose what class you actually want to go to. At the high school you can't—you have to take all general classes" (personal interview, March 5, 2003). Although general education courses may be deemed necessary, Laura's comments highlighted the importance of allowing for some student choice and freedom.

The general students described autonomy related to their assignments at the center. "I choose the job I want to do for the day. If I want to work on brakes, I choose to work on that. Some jobs take longer than others so you have to fit it into the schedule" (John, auto/diesel, personal interview, February 11, 2003). Some students indicated a preference for field work,

We can go out and visit the jails and prisons, see the labs, see how they figure out how to take fingerprints for a crime scene, dust for prints, we just get to do a lot of hands-on [work] to get the feel of what we are going to do when we are [figuring] out where we are going to go in this field. (Alan, criminal justice, personal interview, May 9, 2003)

Even after students chose a course, many still had the option to vary the timing or content of the curriculum to satisfy their styles and specific interests. For example, Alan from the criminal justice program described the mock trial, "You have choices—it depends on the day and can vary a lot. For the trial you can choose who you want to role-play; you can choose a lot of what you want to do" (personal interview, May 9, 2003).

### *Effective, Caring Teachers*

*Talented Students' Perceptions.* The instructors at the center were what initially distinguished this school in a nationwide survey (Gentry et al., 2005). Talented students frequently commented on teacher quality. In fact, these 16 students made a total of 54 distinct comments about the instructors at the CTE center, making this the most frequently coded theme for the talented group. They used such words as “committed, passionate, excited, and energetic” to describe their instructors. As Jenna from early childhood education explained, “The teacher strives for us to work harder toward goals through encouragement” (personal interview, March 4, 2003). The positive atmosphere created by a high level of respect, upbeat and positive discourse, and sense of professionalism on the part of the instructors were major themes of the student comments. The talented students also commented on how much they enjoyed the respect the instructors showed them. “They teach us like an adult here—not like home school . . . it’s more like being in a job or shop setting” (Jake, auto/diesel, personal interview, February 10, 2003). Amber from natural resources and agriculture technology summed up the essence of this theme, “All the teachers and staff here really do put their heart and souls into everything they do” (personal interview, March 7, 2003).

Students specifically noted that teachers at the center looked at student behavior and in coursework for what students did right. Fred from criminal justice commented, “In home school you feel like . . . I think some of the teachers think they are supposed to be police officers instead of teachers. Here it’s geared toward learning and really trying to make you succeed” (personal interview, May 6, 2003). Will from certified network administration explained how teachers went out of their way to help students succeed, “She lets us work around things because I missed a lot of class because of . . . [the national Career and Technical Student Organization competition] so she gives me plenty of time to make up the work” (personal interview, February 13, 2003).

*General Students' Perceptions.* Teachers can have a very powerful effect on students' experiences. In all, effective, caring teachers comprised the second largest number of general student comments with 26 responses. Some of the more general comments about the instructors were not overly detailed. For example, when asked what was important to know about the center, Steve from auto/diesel replied, "It's cool—because the teachers are really nice" (personal interview, February 10, 2003). One student even mentioned the relationships the teachers had with the rest of the staff.

I think it's a better environment than at the home school—the teachers even at the home school, you hear them talking bad about other teachers . . . teachers and principals have a lot better relationships here. [The principal] visits the classroom . . . and talks to us and sees what we are doing. (Alan, certified network administration, personal interview, February 12, 2003)

Comments comparing the CTE and high school teachers were common. "I think [high school teachers] think really low of you—that's how I felt. Here they think you're perfect—they treat you perfect, like you know everything" (Laura, business services technology, personal interview, March 5, 2003). Not only was this positive thinking good for student morale, but it also helped some students academically achieve. The same student explained how her teacher helped her develop self-efficacy (Bandura, 1986).

If you have hard work, they'll take you through it every step and tell you—you can do this—you are capable of this—you are smart and good at this—you can do everything you put your mind to . . . I think it's a lot easier when someone's there telling you that you can do it. That didn't happen in high school. (Laura, business services technology, personal interview, March 5, 2003)



Student comments also showed that they valued the connections that many of the instructors had in their field. This reinforced the idea that some students prefer a purposeful experience in which they could see the direct connection to the field or a specific profession. James from information technology described the teachers as the greatest strength of the program. “It makes a difference that he’s done this type of work, likes it. I know there are teachers that are masters at what they do, they just can’t teach it. Mr. W. has both of those . . . that’s the good part about [the center]—they have both” (personal interview, March 11, 2003).

### *Students With Similar Interests*

*Talented Students’ Perceptions.* Giving students the freedom to choose their own courses resulted in students being grouped with people of similar interests. Six of the overall 14 classmate-related comments were about the students’ preference in working with others who have similar interests. This, combined with the 5 comments about fellow students being more mature or having better attitudes, comprised 11 of the 14 comments. “Here it is a lot more [about] attitude—home school about homework” (Tina, information technology, personal interview, March 10, 2003). “In [home] school it’s like I have to be [there], you know, people here want to be here” (Alice, medical technology, personal interview, January 20, 2003).

Career and Technical Student Organizations (CTSO’s) existed in each area of CTE. Students often perceived these organizations as an opportunity for additional hands-on, in-depth study. Ron from natural resources and agriculture technology explained, “The really huge thing for me is the youth clubs—FFA [Future Farmers of America]—how much the youth clubs make a part of the school here. The development you get from there, like FFA, their . . . goals have been huge to me” (personal interview, March 5, 2003). Benefits were also noted by Will from certified network administration, “Youth clubs are a really big help—they are just something—they are a lot of fun and

competitions have a lot of responsibilities as an officer” (personal interview, February 13, 2003).

*General Students’ Perceptions.* Despite this theme being the least frequent response by the general education students (eight comments), it was still a point of preference over the traditional high school. What was especially interesting about this theme was that five of the eight responses noted an increased level of maturity on the part of the students at the center. Andrea from business services technology offered a detailed description of this theme,

There are so many students [at the home school] that don’t want to learn and treat it like a big joke and make a bad atmosphere. So many obnoxious kids stop everyone else from learning and try to get attention. Here the atmosphere is more professional and the students don’t act like that. (personal interview, March 5, 2003)

When comparing the home school and the center, James from information technology said, “Big difference between there and here. Maturity is one of the biggest things I see. There are still mature kids that go to home school, but I see more of the mature ones going to [the center]” (personal interview, March 11, 2003). This positive atmosphere seemed to enhance both academics and school enjoyment.

### *Learning Relevant Content in an Interactive, Applied Setting*

*Talented Students’ Perceptions.* An aspect of the center that appealed to the students was the clear, often literal connection that learning had to a field, profession, or workplace. Most of the students at the center were juniors or seniors in high school. Many of them had become disinterested with some of their traditional high school course work. The talented students at the center made 36 distinct comments regarding what and how they

were learning and how they preferred the learning at the center to that at their high school.

The work here is really career-oriented—not only do we learn the computer skills, networking—we learn a lot about job skills—if you’re doing something, this is how it will reflect on your employer—they [teachers] always try to use real-world applications. (Will, certified network administration, personal interview, February 13, 2003)

Perhaps no program had a more direct connection to the field than early childhood education. This program ran its own day care.

My program is working with kids, students, adults who might have mental problems—you learn how to deal with problems that kids have—you learn everything about little kids and how to care for them, do CPR so that either when you are babysitting or in a classroom you know how to take care of different situations. (Jaime, personal interview, March 3, 2003)

Students also mentioned their classes being “run like a shop” (Ken, auto/diesel, personal interview, February 10, 2003). The ability for students to be able to see their work in this fashion created an overall sense of increased motivation to perform by the students. “It’s more like job training and preparing you for the field” (Tina, information technology, interview March 10, 2003).

*General Students’ Perceptions.* With 33 distinct, comparative comments, this theme offered the most important explanation concerning why general education students preferred the CTE center over their home schools. Almost one half of these comments ( $n = 15$ ) dealt with learning by doing, hands-on, and discovery learning. “Hands-on activities are a strength of the program—a lot of people learn better hands-on, and for me that’s how I learn

better, and she [the instructor] tries to work that in” (Henry, certified network administration, personal interview, February 12, 2003). Many of the students mentioned that they had a preference for hands-on work because they knew they learned better that way. “I have to do it to learn it; at the home school it’s not really like that. I can’t really learn it out of a book—but I like doing it best, and it’s a strength of this program” (Pat, certified network administration, personal interview, February 12, 2003). The high frequency of comments concerning hands-on learning indicated that many of these students preferred visual-spatial or active learning. Students with visual-spatial characteristics, such as a preference for hands-on learning, represent one group of often unrecognized gifted students (West, 1997). The CTE center focused on learning activities that addressed students’ visual-spatial learning styles and preferences, which contributed to their overall satisfaction with their CTE programs.

Two other categories of this theme each had eight responses. Learning having a clear connection to the field of study and the courses being conducted like jobs in the field were both important concepts. “It’s more like a job environment . . . you’re not afraid to ask questions” (Steve, auto/diesel, personal interview, February 10, 2003). Some students preferred the center coursework because they felt it was preparing them for their future professions. “For one thing, they are teaching stuff that we’re interested in, so it’s easier to get better grades and be more focused because it’s something you want to do” (Alice, criminal justice, personal interview, May 6, 2003). Not all of the students were headed directly to a job. In fact, many were planning to go to college. When asked if he saw his program of auto/diesel as meaningful, Steve responded, “Yes, very much because you can get in [CTSO’s] and get scholarships out of it. It prepares you for life. It gets you ready for college. High school doesn’t do that” (personal interview, February 10, 2003). Certifications and early college credit (either dual or additional enrollment) were very popular among the students and these options provided relevance, rigor, and relationships.

## Discussion

The findings from this qualitative inquiry supported and expanded previous findings in which we described the CTE center in general (Gentry et al., 2005) and the experiences of talented students who attended this center (Gentry et al., in press). Talented students offered more insights into both traditional high schools and the CTE center than did general students, and their perceptions differed somewhat. Concerning the important, positive aspects of the CTE center, students' perceptions were quite similar. The 16 talented students commented most frequently about the quality of their teachers (38%), autonomy (26%), and learning relevant content (26%), whereas the general students stressed learning relevant content (39%), followed by teacher quality (31%) and autonomy (20%). These findings underscore the importance of teachers, relevance of material, and autonomy for all students, with special emphasis on teacher quality for talented secondary students. However, concerning the negative comments about their traditional high school experiences, the talented students frequently spoke about the lack of relevant content and lack of meaningful applications of the content in their high school courses (50%). The general students, on the other hand, commented on the lack of quality teachers in high school with whom they could connect (40%) and the lack of relevant learning experiences (33%). What and how material is taught is important to general students, but even more important to the talented students. General students believed that their high school teachers lacked depth, quality, and caring. This might be due to the large number of students and classes that high school teachers must teach compared to the 2 1/2 hour block that the CTE teachers taught twice each day, for 2 years. Whatever the reason, the high school teachers, in general, did not connect with these students.

As evidenced by the program areas we investigated and the comments the students made about their areas of study, CTE offers students the opportunity to explore interests that exist outside the traditional academic subject areas found in most

high schools. Students, both general and talented, expressed satisfaction concerning their chosen area of study at the CTE center. They acknowledged the meaning they found in their CTE area of study and their enjoyment in being able to study with others who shared an interest in the area of study. Additionally, the CTSO's offered students opportunities for extracurricular involvement in their areas of study. These same students seemed less likely to find similar meaning in their high school courses.

## Implications and Recommendations

### *CTE for Gifted and Talented Students*

CTE afforded benefits to both the talented and general students who participated in an area of CTE study while they attended high school. Although all students have diverse interests, gifted and talented students are often overlooked for CTE programs (Greenan et al., 1995). Therefore, an important implication of this study is that CTE should be an option for talented students. Further, students who attend a CTE program of study may be seen as talented in the CTE setting but not seen as talented in a traditional high school setting. This further underscores the need for diverse learning opportunities to reach more secondary education students and to engage them in their educational experiences.

### *Teachers Matter*

Students described quality CTE center learning experiences and competent, caring teachers. Teachers at this center connected with their students and delivered what the students perceived as meaningful learning experiences in a manner that simply did not occur in the students' high schools. As frequently recommended in the gifted education literature (e.g., Tomlinson et al., 2002; Van Tassel-Baska & Little, 2003), the center programs and instructors provided students with challenge and rigor, and

the students reported enjoying the challenges in their programs. They may have enjoyed the hard work because their instructors held realistic expectations and offered guidance and support—sources of academic self-efficacy (Bandura, 1986).

### *Keeping Students Engaged and in School*

We believe the findings of this study may have implications concerning retention of students in school. At best, the research concerning gifted and talented students who leave school is limited, and, at worst, it is inconclusive with conflicting conclusions (e. g., Irvine, 1987; Renzulli & Park, 2000; Robertson, 1991). This study reinforces previous research that coursework in the area of student interest, including CTE coursework, may keep students connected to and interested in school (Plank, 2001). Being connected to and interested in school may reduce the risk of dropping out of school (DeLuca, Plank, & Estacion, 2006). Specifically, at this CTE center during a 9-year period from 1997–2006, dropout rates averaged 2.13% compared to a national dropout rate of 10.3% (United States Department of Education, 2006) and a state dropout rate of 7.6% (Kids Count, 2005). We speculate that these low rates may be due to the themes we uncovered.

Clearly, many of the students at the center expressed displeasure with their traditional high school experiences; however, they found the CTE setting positive and responsive to their educational needs. Plank (2001) showed that even a part-time CTE experience helped prevent students from dropping out of school. Robertson (1991) and Gewertz (2006) agreed that students often drop out of school due to their perception that school lacks purposeful experiences, real learning opportunities, or a sense of belonging. An option for students to engage in CTE coursework, even if only part-time, could help talented and general students find purposeful experiences in school. Additional research concerning the role of CTE in engaging and retaining both talented and general students in school is recommended.

### *CTE and Visual-Spatial Learners*

Few researchers have studied the connection between talented visual-spatial learners and CTE. This study underscored the need for further research in this area. It is possible that including CTE material, courses, and hands-on experiences would facilitate engagement in learning and manifestation of talents among more secondary students. Gohm, Humphreys, and Yao (1998) reported that visual-spatial students are more likely to attend business or vocational schools as opposed to 4-year universities, and that they often plan on working for a few years before beginning postsecondary education. Participation in an academically challenging CTE program while in high school could provide visual-spatial learners the opportunity to explore potential careers that are demanding and engaging and therefore, reverse underachievement and subsequent underemployment of this population (Gohm et al., 1998).

### *Implications for Secondary Education*

The United States has called for study and reform of secondary education (Committee on Prospering in the Global Economy of the 21st Century, 2006; K-12 Committee of the National Association of Scholars, 2005; Spellings, 2005). Clearly, future research is needed concerning how CTE meets the educational and affective needs of talented and general students. By considering learning environments and experiences from the students' perspectives, important insights can be gained about how traditional high school experiences compare to alternative learning environments. Our research indicates that CTE offers students qualitatively different educational experiences from those they experience in traditional high school settings. Perhaps traditional high school educators could learn from this CTE center and incorporate these findings as they strive to educate today's youth. Students connect to teachers who care about them, they engage when taught content in a meaningful, applied setting, and they value autonomy and opportunities to work with staff



and others who share similar interests. These themes could be applied to “traditional” coursework with some rethinking about how best to connect secondary students to their learning experiences. Teaching content in a more integrated format may allow high school teachers to teach in-depth content to fewer students, similar to the teachers in this CTE center. Teachers can involve their students in meaningful, hands-on learning, offer them choices to foster ownership and self-direction, and connect their lessons to the larger world of work and future possibilities to which students can relate. Such efforts may pay large dividends in student learning.

## Limitations

This qualitative study was limited to the findings from students at one case-study site. Through narrative account we provided rich description with the intention of informing readers as they consider the relevance of these results to other contexts. This study was also limited in that the talented students were selected solely on the basis of criterion-based teacher recommendations. Although this method is not standard, traditional measures would have likely not identified students who were talented in CTE areas. Some questions asked of the students centered on constructs that were used to identify this site as exemplary, yielding data centered on these constructs (i.e., appeal, challenge, choice, meaningfulness, self-efficacy). Further, we cannot be certain whether the CTE experience, the exemplary setting, or the quality of the teachers would be similar in other CTE sites.

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## Appendix A

### Student Interview Protocol

Pseudonym: \_\_\_\_\_

Program: \_\_\_\_\_

High School: \_\_\_\_\_

Number of years at [the center]: \_\_\_\_\_

Other pertinent work experience/s: \_\_\_\_\_

Sex: \_\_\_\_\_ Age: \_\_\_\_\_ Ethnicity: \_\_\_\_\_

1. How did you choose [the center] as a school?
2. What do I need to know about the [the center]?
3. Describe your program at [the center]:
4. Describe yourself as a student, your learning style, your preferences for learning:
5. Is your program appealing to you? Do you find it interesting and enjoyable? In what ways?
6. Does this program/teacher challenge you? In what ways? Examples?
7. Are you offered choices in your program? Explain:
8. Do you find the program meaningful? Explain.
9. How does your teacher help you develop confidence to complete the tasks in the program? Examples?
10. What do you want to do after high school?
11. How does [the center] fit into this plan?
12. What are the greatest strengths of your program, your teacher?
13. What suggestions do you have to improve programs for students at [the center]?
14. Do you have any other comments you'd like to add?

Suggested open-ended questions for talented students

1. What kinds of classes do you take at your home school?
2. How does that program compare to [the center]?
3. What do you see as your strength area? What are you good at here in school?

4. You are part of this project because your teacher here at [the center] identified you as talented in this area. What do you think of that? Do you receive any accommodations here at [the Center] due to your talent in this area, different services, etc.?
5. Does your district/school identify gifted students? Do you know what programs they have?
6. Were you identified for or did you participate in the gifted program?