BROKEN PATHWAYS

The Cracks in Career and Technical Education in Baltimore City Public Schools

Corrie Schoenberg
Danielle Staton
Sadie Baker
Sydney Short

February 2019
WHAT’S INSIDE

EXECUTIVE SUMMARY 2
WHY ANALYZE CAREER AND TECHNICAL EDUCATION—AND WHY NOW? 4
SURVIVING ON $13,000 A YEAR 6
HOW WE DID IT 7
KEY THEMES AND FINDINGS 10
CTE STUDENT STORIES 12
WHAT HAPPENS NEXT? 26
CONCLUSORY NOTE 28
THANKS 29
ENDNOTES 29

Founded in 1984, the Fund for Educational Excellence is a local non-profit whose mission is to support Baltimore City Public Schools so that all City Schools students, regardless of race or socioeconomic status, master the academic material, skills, and experiences needed to be successful at what they aspire to in life. As an independent, trusted partner to the district, funders, and Baltimore communities, we use our deep understanding of education in Baltimore to identify, support, and implement new approaches and programs that ensure all students receive an excellent education. For more information, email info@ffee.org or visit us at www.ffee.org.
EXECUTIVE SUMMARY

In 2008, Baltimore City Public Schools (City Schools) began expanding its career and technical education (CTE) programs in an effort to engage students at risk of dropping out.

Today, 25 Baltimore City high schools offer some selection of CTE programs. In 2017, 9,514 of City Schools’ 21,381 high school students (or 44%) were enrolled in a CTE program, more than double the number of high school students enrolled in CTE in 2008.

City Schools told students that its CTE programs were pathways to rewarding careers that would earn them family-sustaining wages. However, the current design of City Schools CTE programs does not translate to viable pathways to well-paying jobs.

There is little tracking of outcomes for CTE students beyond high school. Recent research by the Baltimore Education Research Consortium (BERC) found that, after six years, students who successfully completed a CTE program earned an annual median income of just under $13,000. These are poverty-level wages and amount to less than half the $28,479 annual salary required to provide for all the needs of a single adult living in Baltimore City.

Given City Schools’ promise of well-paying careers for these students, the Fund for Educational Excellence (the Fund) wanted to understand why the reality of CTE does not measure up to its promise.

WHAT IS CAREER AND TECHNICAL EDUCATION, OR CTE?

CTE is meant to help students specialize in skilled trades, applied sciences, modern technologies, and career preparation. In the State of Maryland, high school students can specialize in areas that are typically called career clusters or programs of study; examples include information technology, nursing, cosmetology, and biomedical sciences.

How CTE Program Placement Works

8th grader can apply to high school and CTE program on the City Schools choice application.

If placed at a CTE center,* 8th grader is accepted to a high school and CTE program.

9th grader takes only core courses at new high school.**

9th grader is asked to submit CTE program preferences again.

Student is assigned CTE program sometime between 9th grade and start of 10th grade. The assignment may or may not match the program the student was accepted to.

* Within Baltimore City Public Schools, the term ‘CTE center’ is used to describe a school where every student is expected to enroll in a CTE program.

** Students enrolled in Project Lead the Way programs in biomedical sciences and pre-engineering begin courses in 9th grade, as these are four-year programs.
In 2018, we surveyed and interviewed 114 recent City Schools students between the ages of 18 and 24 who had been enrolled in CTE programs. We also interviewed 25 current City Schools CTE teachers. Survey data from our student participants indicates that 67% earn less than $12,140 annually. We analyzed all of the interview transcriptions, using an inductive approach to generate key themes by density, which are as follows:

**STUDENT THEMES**

1. **Exposure to real-world experiences for students:** Internships and other real-world experiences are not universally part of CTE programs.

2. **CTE program placement:** How students are placed in their CTE programs of study varies from school to school.

3. **Post-secondary outcomes:** Recent CTE students’ employment situations vary, although many more are underemployed or unemployed rather than fully employed in family-sustaining jobs.

4. **Transfers:** Transferring from one CTE program to another within a school is difficult.

5. **CTE certifications:** Many students earn certifications through their CTE programs, although some programs do not culminate in certification.

6. **Career goals:** Many students hoped that their CTE programs would set them on a path to attaining their career goals.

7. **Counseling/advising:** Some advising is available in schools for students who intend to go to college, but little advising is available in schools for students headed directly into the workforce.

8. **The importance of teachers:** CTE teachers are often central to the success of their students.

**TEACHER THEMES**

1. **How teachers experience CTE:** The experiences of CTE teachers in City Schools often differ from those of core subject teachers in critical ways.

2. **District- and school-level barriers to student success in CTE:** Conditions imposed by both schools and the City Schools central office make it harder for students to maximize their experience in CTE programs.

The students and teachers we interviewed had a number of recommendations for how CTE in City Schools could be improved. Their ideas align with many of the best practices outlined in the Association of Career and Technical Education’s “CTE Program of Study Framework.” Student and teacher recommendations include:

1. **Provide year-round, paid internships to all CTE students.**

2. **Provide a better balance between ‘book work’ and ‘hands-on work.’**

3. **Give students in the middle grades more information on the CTE options available to them in high school.**

4. **Staff CTE programs with committed teachers who are willing to engage with and coach students one-on-one.**

5. **Allow more time in student schedules for CTE classes.**

Based on student and teacher recommendations, the Fund recommends that City Schools engage in a complete overhaul of its CTE programs to fulfill its commitment to students of providing pathways to rewarding, well-paying jobs.
WHY ANALYZE CAREER AND TECHNICAL EDUCATION—AND WHY NOW?

What does your life look like if you earn $13,000 a year? Where and how much do you work? Can you provide shelter for and feed yourself or a family? What do you aspire to, and how do you plan to achieve your goals? These questions have been unrelenting for us at the Fund for Educational Excellence over the past year given some troubling data: Six years out of high school, Baltimore City Public Schools graduates from the classes of 2008 through 2010 were earning an annual median income of less than $13,000.\(^1\)

This data—with analysis provided by the Baltimore Education Research Consortium (BERC)—comes from the Maryland Longitudinal Data System (MLDS). Its purpose is to “generate timely and accurate information about student performance that can be used to improve the State’s education system and guide decision makers at all levels.”\(^2\) The MLDS database links educational and workforce data for those with a record of employment in the State of Maryland. It includes graduates of four- and two-year colleges, those who started a higher education program but never completed it, those who are still enrolled in a higher education program and may be working part-time, those who never enrolled in a higher education program and went straight to work, and those who have had only sporadic work experiences.\(^3\)

The BERC analysis does not share graduates’ current employment and educational situations. It does tell us that career and technical education (CTE) completers fare best among these graduates; they are the ones with a median annual income of $13,000—higher than those who did not complete a CTE program. What is striking, however, is that City Schools describes its CTE programming as providing students:

“…rigorous academic courses and…work-based learning opportunities, including job shadowing, mentoring with industry professionals or internships. After successful completion of a CTE program, students can graduate from high school with industry certification or college credit—and have a ‘leg up’ toward an in-demand, well-paid career.”\(^4\)

Annual earnings of $13,000 do not come close to a self-sustaining, much less a family-sustaining, wage in Baltimore City. These earnings are poverty-level wages.\(^5\)

To learn more about the experiences of City Schools CTE students during high school and beyond, the Fund conducted a mixed methods analysis of CTE in City Schools in 2018. Our surveys of and interviews with City Schools students who were enrolled in CTE programs suggest that success stories among CTE completers are not the norm. Of the students we interviewed for this report, 67% were earning less than $12,140 annually. Thirty-nine percent (39%) of those earning less than $12,140 per year had earned a CTE certification.

**It is time to re-examine what City Schools CTE programs promise to students. City Schools is not fulfilling the expectations it sets for students and families in its descriptions of CTE career clusters and programs.**

One of the key findings from our previous report, *Calculated Choices*, which examines school choice in City Schools, is that CTE is an important factor in high school selection.\(^6\) Today, 25 Baltimore City high schools offer some selection of CTE programs.\(^7\) In 2017, 9,514\(^8\) of City Schools’ 21,381 high school students\(^9\) (or 44%) were enrolled in a CTE program, more than double the number of high school students enrolled in CTE in 2008.\(^10\)
City Schools’ expansion of CTE programs was a strategic move to address a drop-out problem that peaked a little more than a decade ago. In 2005, nearly 3,000 students (11% of high school students) dropped out of school. According to former and current City Schools officials in the College and Career Readiness office, the expansion of CTE was initially meant to engage students who were at risk of dropping out. By 2010, the number of City Schools dropouts had declined to 1,098, although it has ticked upward in subsequent years.

However, City Schools did not promote CTE programs to students as a way to keep them engaged in school; instead, the district marketed CTE programs as a sure path to a well-paying job. Over and over again, we heard from young adults that the promise made by City Schools of a leg up to a well-paid career does not match the experiences of the students who enrolled in these programs.

Given the fact that nearly half of high school students are enrolled in CTE courses, this is the ideal time to examine what is happening in CTE and how to improve it.
SURVIVING ON $13,000 A YEAR

FIGURE 3: Typical annual living expenses for a Baltimore City adult resident


<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>$2,994</td>
</tr>
<tr>
<td>Housing</td>
<td>$11,016</td>
</tr>
<tr>
<td>Medical</td>
<td>$2,479</td>
</tr>
<tr>
<td>Transportation</td>
<td>$4,623</td>
</tr>
</tbody>
</table>

$13,000

Annual median income for City Schools CTE completer six years after graduation.
HOW WE DID IT

Our listening campaign about career and technical education in Baltimore City Public Schools kicked off in February 2018 and wrapped up in early August 2018. For this campaign, the Fund and a partner organization conducted individual interviews with recent City Schools students, ages 18 to 24, who had been enrolled in career and technical education at some point during high school. These interviews took place in public locations convenient to the interviewees, who were each paid a $30 stipend for their time. The Fund also interviewed current CTE teachers, primarily at their school locations; teacher interviewees were not compensated.

To ensure a consistent experience throughout the campaign, interviewers used a defined protocol. The protocol for teacher interviews was approved through the City Schools institutional review board (IRB) process.

WHO PARTICIPATED

In total, we heard from 114 recent City Schools students, ages 18 to 24, about their experiences, ensuring a holistic picture of how students experience CTE. Our student interviewees came from every CTE career cluster (see following page) and every type of school setting where CTE is offered. CTE programs are offered in high schools with academic entrance criteria; CTE centers with and without academic entrance criteria; traditional high schools with fewer optional CTE programs for students; and alternative high schools. We also heard from students with varied outcomes. For example, most City Schools students who enroll in CTE courses do not complete a program. To understand why outcomes vary, we endeavored to hear from former students who earned certification, who completed a program but did not earn a credential, and who did not complete a program.

Twenty-five (25) teachers were also interviewed. Participating teachers taught in every career cluster except Transportation Technologies and in every type of school setting where CTE is offered except alternative high schools. The teachers we heard from ranged from new to veterans with more than fifteen years’ experience in the classroom.

ANALYSIS

The Fund’s Analysis and Engagement team examined the combined 139 interviews using an inductive approach to identify key themes and findings for student and teacher participants. In order to generate themes, the Fund transcribed interviews and analyzed the transcriptions using mixed methods analytical software. Eight people performed the analysis of these conversations. Analysis team members coded excerpts from each transcribed interview with short descriptive phrases. The team lead conducted checks for data quality assurance during the coding process. The team then grouped codes into like categories and quantified them. In this way, we were able to identify a set of key themes and findings from the interviews.

WHAT WE HEARD

From our interviews, ten major themes emerged that tell us how Baltimore City Public Schools students and teachers experience career and technical education. The first eight of these came from our interviews with students; the final two emerged from our interviews with current teachers. In descending order beginning with the largest, key themes are listed on pages 10 to 11. Each theme is comprised of several findings that detail what we heard from students and teachers. Findings express the student and/or teacher point of view and come directly from our interviews.

In the pages that follow, we take a closer look at these themes through four recent students’ experiences, teacher and student interview excerpts, and analysis.
### FIGURE 4: City Schools CTE career clusters, programs, and certifications

<table>
<thead>
<tr>
<th>CTE CAREER CLUSTER</th>
<th>PROGRAM</th>
<th>POSSIBLE CERTIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts, Media, and Communication</td>
<td>Graphic Communications</td>
<td>PrintEd</td>
</tr>
<tr>
<td></td>
<td>Interactive Media Production</td>
<td>Adobe Creative Suite or World Organization of Webmasters (WOW) Certified Web Designer Novice</td>
</tr>
<tr>
<td>Business, Management, and Finance</td>
<td>Business Administrative Services</td>
<td>Microsoft Office Specialist-Basic (Word or Excel)</td>
</tr>
<tr>
<td></td>
<td>Business Management</td>
<td>Optional certifications (including Microsoft Office Specialist-Basic, ServSafe Food Handler, etc.)</td>
</tr>
<tr>
<td></td>
<td>Finance and Accounting</td>
<td>National Construction Career Test (NCCT), Core and Level 1</td>
</tr>
<tr>
<td>Career Research and Development</td>
<td>Career Research and Development</td>
<td>Autodesk Certified User: AutoCad</td>
</tr>
<tr>
<td>Construction and Development</td>
<td>Construction Trades Professions: Carpentry</td>
<td>ProStart Certificate of Achievement or ServSafe Food Handler</td>
</tr>
<tr>
<td></td>
<td>Construction Trades Professions: Electrical, Plumbing, and Masonry</td>
<td>Certified Rooms Division Specialist</td>
</tr>
<tr>
<td></td>
<td>Construction Maintenance: Welding</td>
<td>Licensed Hairstylist or Cosmetologist</td>
</tr>
<tr>
<td></td>
<td>Computer-Aided Drafting and Design (CADD)</td>
<td>National Center for Competency Testing Tech in Surgery</td>
</tr>
<tr>
<td>Consumer Services, Hospitality, and Tourism</td>
<td>Culinary Arts: Baking</td>
<td>Emergency Medical Technician</td>
</tr>
<tr>
<td></td>
<td>Food and Beverage Management (ProStart)</td>
<td>Biomedical Sciences: Project Lead the Way</td>
</tr>
<tr>
<td></td>
<td>Lodging Management Program</td>
<td>No certification</td>
</tr>
<tr>
<td></td>
<td>Careers in Cosmetology</td>
<td>Fire Science</td>
</tr>
<tr>
<td>Health and Biosciences</td>
<td>Academy of Health Professions/Allied Health: Nursing</td>
<td>Academy of Health Professions/Allied Health: Nursing</td>
</tr>
<tr>
<td></td>
<td>Pharmacy Technician</td>
<td>Certified Nursing Assistant (CNA), Geriatric Nursing Assistant (GNA, optional)</td>
</tr>
<tr>
<td></td>
<td>Surgical/Operating Room Technician</td>
<td>Pharmacy Technician</td>
</tr>
<tr>
<td></td>
<td>Emergency Medical Technician</td>
<td>National Center for Competency Testing Tech in Surgery</td>
</tr>
<tr>
<td></td>
<td>Biomedical Sciences: Project Lead the Way</td>
<td>Emergency Medical Technician</td>
</tr>
<tr>
<td>Human Resource Services</td>
<td>Early Childhood Education/Childcare</td>
<td>No certification</td>
</tr>
<tr>
<td></td>
<td>Teacher Academy of Maryland (TAM)</td>
<td>Fire Science</td>
</tr>
<tr>
<td></td>
<td>Homeland Security and Emergency Preparedness</td>
<td>Information Support and Services</td>
</tr>
<tr>
<td></td>
<td>Law and Leadership</td>
<td>Microsoft Office Specialist or Microsoft-certified Desktop Support Technician</td>
</tr>
<tr>
<td></td>
<td>Fire Science: Maryland Fire and Rescue Institute (MFRI)</td>
<td>Oracle-certified associate (OCA1 or OCA2)</td>
</tr>
<tr>
<td>Information Technology</td>
<td>Information Support and Services</td>
<td>Computer Technology Industry Association A+ or CISCO-certified Entry Network Technician</td>
</tr>
<tr>
<td></td>
<td>Database Academy (Oracle)</td>
<td>No certification</td>
</tr>
<tr>
<td></td>
<td>IT Networking Academy (CISCO)</td>
<td>No certification</td>
</tr>
<tr>
<td>Manufacturing, Engineering, and Technology</td>
<td>Pre-Engineering: Project Lead the Way</td>
<td>No certification</td>
</tr>
<tr>
<td></td>
<td>Manufacturing Engineering Technologies</td>
<td>Automotive Service Excellence</td>
</tr>
<tr>
<td>Transportation Technologies</td>
<td>Automotive Technician</td>
<td>Transportation Worker Security Credential and Merchant Mariner Credential</td>
</tr>
<tr>
<td></td>
<td>Autobody/Collision Repair Technician</td>
<td>No certification</td>
</tr>
</tbody>
</table>

Source: “CTE Program Certifications and College Credits.” Baltimore City Public Schools. https://www.baltimorecityschools.org/Page/24999
FIGURE 5: Recent City Schools CTE student interviewee demographics

### RACE/ETHNICITY
- 89% Black/African-American
- 1% White
- 4% Hispanic
- 1% Asian/Pacific Islander
- 4% Did not respond
- 4% Multiracial

### TYPE OF HIGH SCHOOL ATTENDED
- 40% CTE center with academic entrance criteria
- 25% Traditional public high school
- 4% Public charter high school
- 5% Alternative high school
- 15% CTE center without admissions criteria
- 10% High school with academic entrance criteria

### HIGHEST LEVEL COMPLETED IN CTE
- 39% Certified
- 37% Completed
- 21% Did not complete CTE program

### EDUCATIONAL ATTAINMENT
- 64% High school diploma or equivalent
- 25% Some college, no degree
- 4% No diploma
- 2% Associate's degree
- 4% Did not respond
- 3% Bachelor's degree or more

### HAVE BEEN EMPLOYED IN JOB RELATED TO CTE PROGRAM
- 42% Have had some work experience related to their CTE program
- 58% Have not had any employment related to their CTE program

### INDIVIDUAL INCOME
- 67% Less than $12,140
- 8% $12,140 - $20,000
- 3% $20,001 - $25,000
- 3% $25,001 - $30,000
- 3% $30,001 - $35,000
- 3% More than $35,000
- 13% Did not respond

### STUDENTS IN OUR SAMPLE, COUNT BY CURRENT EMPLOYMENT AND EDUCATION SITUATION

<table>
<thead>
<tr>
<th>Current Employment and Education Situation</th>
<th>Enrolled in College or Post-Secondary Program</th>
<th>Not Enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time, earning living wage</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Full-time, not earning living wage</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Part-time</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>Unemployed, looking for employment</td>
<td>20</td>
<td>29</td>
</tr>
<tr>
<td>Unemployed, not looking for employment</td>
<td>8</td>
<td>1</td>
</tr>
</tbody>
</table>
KEY THEMES AND FINDINGS

STUDENT THEME: EXPOSURE TO REAL-WORLD EXPERIENCES FOR STUDENTS

- Some internship opportunities are available to CTE students, often through external partners.
- Real-world experiences are not universally part of CTE programs. Just as many students reported doing mainly ‘book work’ in CTE classrooms as had exposure to hands-on work, guest experts, and out-of-school experiences.

STUDENT THEME: CTE PROGRAM PLACEMENT

- How students are placed in their CTE programs varies from school to school—from opportunities to learn about the different programs and whether student preferences are taken into account to when and how assignments are determined.

STUDENT THEME: POST-SECONDARY OUTCOMES

- Recent CTE students’ employment situations vary, although many more are underemployed or unemployed than are fully employed in family-sustaining jobs.
- CTE students hear clear messages from their high schools encouraging them to attend college—and many do or plan to.

STUDENT THEME: TRANSFERS

- Transferring from one CTE program to another within a school is difficult. Schools are reluctant to allow students to transfer, and a transfer after a student has started a program in 10th grade usually means that the student cannot earn certification. (Most CTE programs are comprised of three or four year-long courses that students must take sequentially, eliminating the opportunity to make up missed—or failed—courses.)
- Students who transfer from one school to another may or may not be able to continue the CTE program they have started, depending on availability and capacity at the accepting school.

STUDENT THEME: CTE CERTIFICATIONS

- Many students earn certifications through their CTE programs, although a few programs do not culminate in certification.
- Some students did not know whether they had earned certification.

STUDENT THEME: CAREER GOALS

- Most students have clear aspirations and career goals.
- Many students hoped that their CTE programs would set them on a path to attaining their goals.
STUDENT THEME: COUNSELING/ADVISING

- Some advising is available in schools for students who intend to go to college, but *little advising is available in schools for students headed directly into the workforce*.
- Students who were already working or wanted to enter directly into a career after high school sought counsel and advice from teachers, mentors, coaches, and external programs (e.g., Urban Alliance, Building STEPS, etc.).

STUDENT THEME: THE IMPORTANCE OF TEACHERS

- A strong connection to a teacher is often the reason a student decides on a particular program.
- CTE teachers are often the primary source of counseling and advising about life after high school for their students.
- When a CTE teacher leaves a school, especially midyear, her students may be unable to complete the program or earn certification.

TEACHER THEME: HOW TEACHERS EXPERIENCE CTE

- The instructional load is often lighter for CTE teachers than for core subject teachers. Depending on the school and program, some CTE teachers teach only three classes a day and between 15 and 30 students per year, compared to teachers of core subjects who teach five periods a day and approximately 200 students per year.
- CTE teachers are entrepreneurial—they often find ways to get what they need for themselves—and many feel that this is a necessity.
- CTE teachers find that support is available to them if they know where to go to ask for it.
- Teacher certification is particularly tricky to navigate for CTE teachers, who cite a lack of communication about requirements and timelines between the City Schools certification office, the CTE office, and new teachers.
- District-provided professional development is repetitive and rarely focuses on instruction.
- CTE teachers tend to have a number of years of industry experience.

TEACHER THEME: DISTRICT- AND SCHOOL-LEVEL BARRIERS TO STUDENT SUCCESS IN CTE

- CTE students sometimes end up in programs that are not a good fit—either they do not understand the work involved in the program they have chosen, or they were placed in a program they didn’t choose due to scheduling reasons.
- Forcing CTE program courses into 45- or 72-minute periods in traditional school schedules does not allow enough time for students to learn the material.
- School-based and central office bureaucracies sometimes frustrate teachers’ efforts to make CTE programs work for their students in the ways they are intended to.
- Funding allocations at the school level are not always determined in the most strategic ways, and some teachers have to make up shortages through other means.
As a student at a diverse South Baltimore elementary/middle school, Octavia originally wanted to go to Baltimore Polytechnic Institute (Poly) or Baltimore City College (City) for high school. “I initially wanted to go to...one of those top-notch high schools...but my composite score and my GPA from middle school wasn’t as high to get accepted.... And so I wanted to go to [my high school] because I was like, ‘I can get a trade and it’s close to my house.’”

At her high school, ninth-grade students take only core subject courses—English language arts, math, a science, etc. However, the school requires that every student take a CTE program, often referred to in schools as a ‘trade,’ beginning in 10th grade. Octavia got the sense that the school was trying to push vocational trades that would “give students a career in case college was not for them.” To provide students with information about the trades it offered, the school held a showcase day where students could learn about the trades—“what they stand for, what the benefits are, etc.”

When it was time to select a trade at the beginning of her 10th-grade year, Octavia was already thinking that she might want to have a career doing hair. Cosmetology was a natural fit for Octavia, because several family members do hair and she shares the same passion. What clinched her decision was the cosmetology teacher at her high school, who made the point that it would be a benefit to graduate with a diploma and a trade that you could use to support yourself.

“When I wouldn’t mind doing hair because it’s a growing industry and it’s always profitable. And I don’t know, I liked the science about the body so it was kind of closely related to my interests. I have a family full of cosmetologists, so I kind of just figured that I could always ask my grandmother to help me to pass the test.”

She selected the cosmetology program and paid the required $300 for her cosmetology kit.

“My guidance counselors, and my vice principals, and my principal sat down with all of us and had a big meeting in the auditorium to tell us about the ins and outs of the trade, what to expect. And they gave us a whole packet of the hours, the requirements to get certified. So not only are they endorsing...vocational, they’re teaching you how to get certified in your trade. I feel like it was good quality information. They really prepared me for the state board, the requirements before I came in the trade, and then constantly throughout the semester and through the course, kept me informed about what to expect.... So I guess they did a really good job at my school.”

Tenth grade was an introduction to cosmetology; students learned terminology and completed much of their ‘book work.’ In 11th grade, students did more application and practice with clients. Twelfth grade was preparation for the state boards. There are two different parts to the state cosmetology boards, the theory and the practical. For the practical:

“They’ll tell you what to look for for decontamination. For the curling irons, practice holding and making sure the client is protected and you ensure that style would be long-lasting after they have it. And pretty much they’ll do the trial [of the] actual state board.... So 12th-grade year was all about we’ll come to class, we’ll set up, we’ll do each thing that’s on the test in a timely manner, time myself, and she’ll score us, so we can know how we’ll perform...in the actual state board.”

In her last two years of high school, Octavia had plenty of opportunities to gain practical, hands-on experience and learn from professionals in her field both in and out of school.

“My family was really licensed cosmetologists, so I always seen them in action. And we had an in-house salon so I always see the real clientele.... We’ll have our family members or anybody that would come in, we’ll do their hair for hours.... And then every, I guess year, we’ll have a cosmetology trip. We go to New York and we’ll go to the convention center and see all different stylers. And then you learn your techniques, different products, different equipment, help at the salon.
EXPLORING CTE PROGRAMS

Many students enter CTE without a real sense of which programs are available where or what those programs entail. Beyond the names of the career clusters, information about CTE programs in City Schools in print or online is scant. Career cluster names are not always intuitive—for instance, Human Resource Services includes both the childcare and homeland security and emergency preparedness programs. The district’s Middle and High School Choice Guide includes one-word descriptions of CTE programs, along with listings of which career clusters (but not programs) are available in which schools.

As a result, students sometimes apply to high schools that do not have CTE programs they are interested in, and they lose out on the opportunity to learn content and skills that could motivate them to pursue a career. As was the case with Octavia, who learned about the ‘trades’ available at her high school during a showcase day, most students learn more about City Schools CTE offerings in 9th grade. In interviews with both recent students and current teachers, we learned how some high schools are developing methods to help their 9th-grade students explore CTE programs with an eye to helping them select a field that is a good fit for their interests and goals.

FIGURE 6: Examples of CTE exploration in Baltimore City Public Schools

<table>
<thead>
<tr>
<th>Mini course for each CTE program offered</th>
<th>CTE shadow days</th>
<th>One-week summer bridge orientation</th>
<th>CTE fair</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th-grade students can take a mini course in each CTE program and identify the one they want to pursue at the end of the year</td>
<td>9th-grade students can shadow CTE students in programs of interest</td>
<td>Students spend time with CTE teachers or learn about CTE programs in other ways (e.g., orientation video) before the start of the school year</td>
<td>CTE teachers share presentations about their programs with 9th-grade students</td>
</tr>
</tbody>
</table>

“And we’ll also have a back-to-school night where we’ll have private vendors come and speak to us about their businesses…. All our teachers are certified, and most of them had their own salon or have worked in a salon, and it also connects us to clientele, people that would like to hire fresh cosmetologists or stylists…. Our teachers will bring in some of their friends that they went to school with, and they’ll open up their business and kind of talk to us and help us with how to get along in the field, and how we can branch off and make profitable earnings, and how to further our education even after we’ve graduated from high school.”

Octavia completed the cosmetology program at her school, earned her certification, and graduated. She is now in her third year at a small liberal arts college, double-majoring in philosophy and psychology. With her license, she is able to supplement what she makes from her part-time job at the campus bookstore by doing hair on the side.

“I do hair on campus because that’s on the license, cosmetology…. I can do more hair but I guess with college, I just wanted to get my bachelor’s degree…. But I would have loved to have been in salon. I had offers to work in a salon, but I didn’t want to go into college my freshman year and have a full-blown cosmetology job and school, being a double major…. So right now it’s just academics and I do hair on the side.”

OUTCOMES FOR CTE STUDENTS

With her cosmetology certification in hand, Octavia was well situated to start a job in a salon or to earn some extra income to cover college expenses. However, as the following stories illustrate, most students who enroll in CTE programs in City Schools do not complete their programs or attain certification.

FIGURE 7: Outcomes for 2012 and 2013 graduates ever enrolled in CTE

65% Did not complete
23% Completed
12% Completed and certified

Source: “Preparing for Success: City Schools Students’ Path to College and Career Readiness.” Presentation to the Baltimore City Board of School Commissioners. 27 May 2014
Diamond started high school at a large CTE center with dreams of entering the U.S. Navy after she graduated. She struggled academically during her first two years and planned to transfer with her brother to a traditional high school on Baltimore’s west side for her junior and senior years. While her brother’s transfer went through successfully, Diamond’s transfer fell through when the paperwork was lost.

“When I transferred from [my old school]—it was a mistake…me and my brother was transferring but they lost my papers so I had to do it over. But it was already the end of the summertime…. So they said there wasn’t no more schools I could go to because I failed.”

Diamond was placed at an alternative school to help her get back on track to graduate. At her new school, she had to enroll in the Career Research and Development (CRD) program, because it was a graduation requirement. According to Diamond, there were three key components to CRD:

1. Taking a personality assessment to determine what types of careers might be the right fit;
2. Creating a résumé; and
3. Finding a real job.

Students needed 270 hours of work experience to successfully complete the class, so the CRD teacher focused on helping students without jobs find jobs. Because Diamond was already employed at McDonald’s, the teacher determined that that job would count as her work experience. There was no effort made to connect Diamond with a job related to her interests or the results of her personality assessment.

“[I]f you already had a job then you can use—you can just stay with the job you already got. But if not then certain places the teacher—she help you get a job in. Some people got a job at Bank of America. And at Bayview, the hospital. Stuff like that. I was already working. I was working at McDonald’s.”

Despite not having a job that aligned with her interests, Diamond enjoyed her CRD class, in large part because “we went everywhere.” Her teacher took the students to job fairs and on field trips, and they heard from guest speakers who came to the school to talk to the students about their work. Her teacher also helped students develop résumés for themselves.

Diamond graduated from high school in June. She still works at McDonald’s but is now also enrolled in the Grads2Careers biotechnology program. She wants to be a forensic scientist. Diamond learned about the Grads2Careers program, which helps City Schools graduates connect to free job training, credentials, and a career path, from classmates her CRD teacher was assisting with employment opportunities. Because Diamond already had a job, her teacher was not providing this assistance for her. Diamond explained:

“My teacher sent my brother here [to Grads2Careers], and my teacher sent a lot of people from my school here. But I got into it because they told me about it.”

Diamond has applied for other jobs since graduating, but she thinks her discomfort with interviewing has held her back.

“I don’t like interviews and stuff. The online applications and stuff, that’s the easy part for me…like my first job, I didn’t really have an interview. The lady just told me to bring everything I needed to bring…. She never asked me no questions or none of that. So when people ask me questions, I don’t—it’s like I know how to answer the questions, but I don’t know—when I’m ready to speak, it don’t come out how it was supposed to come out.

“[L]ike one time I was in an interview and they asked me why should they pick me over everybody else?… And I says, ‘I can’t speak for everybody else.’ And then I talk, and I say what I got to say, but in the middle, I pause, think a little bit, and that’s just too much, because they probably think I’m sitting there trying to think of something. I think the problem is I don’t think I sound… as professional as what I’m saying.”
WHAT IS CAREER RESEARCH AND DEVELOPMENT, OR CRD?

Career Research and Development (CRD) is offered in the state of Maryland as one of the ten ‘career clusters’ organizing the state’s CTE programs. Maryland State Department of Education (MSDE) describes CRD as a “CTE program that prepares students with the academic, technical, and workplace skills necessary to seek further education and employment in a career field of their interest upon graduating high school.” MSDE outlines a framework for CRD consisting of “two in-school course(s), a portfolio development project, and a work-based learning experience.” The two courses are meant to cover topics including career awareness, self-awareness, an exploration of career choices, and preparation for entering the workforce. CRD does not culminate in any industry-recognized certification, although some school districts offer optional certifications in such areas as financial literacy or “workplace readiness” to CRD participants.

CRD is the largest CTE program in City Schools, enrolling more than 1,000 students. Students may select CRD as a pathway, or they may be placed in CRD as a graduation requirement. In practice, CRD seems to have become the default placement for students who, for various reasons, were not able to continue in their original program.

The work-based learning component of the CRD program is intended to provide students with a real-world employment experience that is linked to their career interests. According to the MSDE website, the work-based learning experience is supposed to be a “mentored” work experience that will “prepare students for employment that leads to a family-supporting wage.” In contrast to these goals, far too many students in our CRD programs are like Diamond, placed in employment experiences unrelated to their career goals that are more likely to keep them confined to jobs that pay only a minimum wage.

Despite a lack of standardized and intentional design applied to the State’s framework for CRD, it is the single largest CTE program currently operating in City Schools.

PREPARATION FOR THE JOB MARKET

Like Diamond, many other recent CTE students also felt ill-prepared to engage with the job market. Their experiences illustrate a disconnect between what they learn in their CTE courses and how to apply for jobs they are qualified for.

A few are unaware of how the process of applying for employment typically works:

“I don’t really get too many offers anymore like when I was in high school, how people come to your school…and you talk to them. Once you’re out of high school…you don’t really get that much exposure. You don’t really get any calls.”

Others are unsure of where to find job listings that align with their talents and skills:

“I’m uploading applications on Indeed…. I’m trying to find a job anywhere really, but it’s hard, you know…. I’m not really sure where I would start to look…. [T]he first move is we call them? I don’t know like, what is the time period in what [an employer] will call [you back]?”

Others were left with an unrealistic sense of their qualifications for positions of interest:

“I was looking for anything connecting to my…experiences I did through the years. I couldn’t get anything…. I kept fixing my résumé, went to programs that try to fix my résumé…go to John Hopkins, somewhere to be placed, but then it came to denial…. I wanted the job that I pictured in my head, but then in reality I had to lower my expectations.”

FIGURE 8: City Schools CTE enrollment by program, 2018

<table>
<thead>
<tr>
<th>Program</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seagoing</td>
<td>59</td>
</tr>
<tr>
<td>Auto/Collision Repair Technician</td>
<td>47</td>
</tr>
<tr>
<td>Automotive Technician</td>
<td>187</td>
</tr>
<tr>
<td>Manufacturing Engineering Technologies</td>
<td>19</td>
</tr>
<tr>
<td>Pre-Engineering</td>
<td>596</td>
</tr>
<tr>
<td>IT Networking (CISCO)</td>
<td>852</td>
</tr>
<tr>
<td>Database Academy (Oracle)</td>
<td>80</td>
</tr>
<tr>
<td>Information Support &amp; Services</td>
<td>896</td>
</tr>
<tr>
<td>Fire Science</td>
<td>19</td>
</tr>
<tr>
<td>Law &amp; Leadership</td>
<td>593</td>
</tr>
<tr>
<td>Homeland Security-Emergency Preparedness</td>
<td>251</td>
</tr>
<tr>
<td>Teacher Academy</td>
<td>68</td>
</tr>
<tr>
<td>Childcare</td>
<td>278</td>
</tr>
<tr>
<td>Biomedical Sciences</td>
<td>375</td>
</tr>
<tr>
<td>Emergency Medical Technician</td>
<td>125</td>
</tr>
<tr>
<td>Surgical Technician</td>
<td>32</td>
</tr>
<tr>
<td>Pharmacy Technician</td>
<td>40</td>
</tr>
<tr>
<td>Nursing</td>
<td>830</td>
</tr>
<tr>
<td>Cosmetology</td>
<td>883</td>
</tr>
<tr>
<td>Lodging Management</td>
<td>40</td>
</tr>
<tr>
<td>Food &amp; Beverage Management</td>
<td>394</td>
</tr>
<tr>
<td>Baking</td>
<td>150</td>
</tr>
<tr>
<td>Computer-Aided Drafting and Design</td>
<td>40</td>
</tr>
<tr>
<td>Welding</td>
<td>129</td>
</tr>
<tr>
<td>Electrical, Plumbing, and Masonry</td>
<td>221</td>
</tr>
<tr>
<td>Carpenter</td>
<td>1,018</td>
</tr>
<tr>
<td>Career Research &amp; Development</td>
<td>52</td>
</tr>
<tr>
<td>Finance and Accounting</td>
<td>534</td>
</tr>
<tr>
<td>Business Management</td>
<td>54</td>
</tr>
<tr>
<td>Business Administrative Services</td>
<td>560</td>
</tr>
<tr>
<td>Interactive Media Production</td>
<td>151</td>
</tr>
</tbody>
</table>

COUNSELING/ADVISING

Proper counseling and advising plays a critical role in successfully choosing and completing a CTE program. Access to quality school counselors has been linked to increased school attendance, increased graduation rates, and even increased test scores.\textsuperscript{28} Research has identified school counselors as having a particularly positive impact on students at under-performing schools and high-poverty schools.\textsuperscript{29} Effective counselors are able to help guide students to career choices that suits their interests, academic strengths, and abilities. Counselors are able to provide important information about what a specific program entails and can dispel any myths or misconceptions about a given career program. Throughout high school, a counselor can provide key information around course selection, ensuring that students are taking courses that appropriately align with their career goals. For students who might be the first in their family to graduate from high school or attend college, access to a school counselor can mean the difference between dropping out of high school or deciding to apply to a four-year college.\textsuperscript{30} Despite the many benefits of high-quality counseling and advising, students in our study mentioned limited access to school counselors and career advice.

The American School Counselor Association recommends a student-to-counselor ratio of 250 to 1.\textsuperscript{31} Most recently, the student-to-counselor ratio in City Schools high schools was 318 students per counselor.\textsuperscript{32}

With a limited number of school counselors managing very large student caseloads, students often look for academic and career advice from a wide range of individuals, from family members to coaches, church members, and most often teachers. In addition to teachers being a main source of counseling, they are also cited as the preferred source for academic and career advice by recent CTE students.

"Honestly, I can really just say my teacher was like my counselor, because he was the one that was there for me. He was the one that I could talk to if I needed help with a project, or if I needed help trying to find an outside job. He’s actually the reason why I got my Baltimore City Schools job, because, at first, it started off as an internship, but then it turned into an actual real job, because they had liked me and they wanted me to come back. And that’s all thanks to him, because he taught me how to do that."

"Well, at first, I was going to go to college and try to study a trade there. But then, as I was doing the trading school, my teacher told me about an apprenticeship that I could join that I can go straight and just do only electrical. And it’s the same amount of time as college would be, but I’m just doing only electrical, and I’m getting paid to do the stuff there, too. So I’m like, ‘That seems like it’s better than college,’ so that’s what I was going to do."

External programs also played a key role in providing counseling and advising to students. College and career development programs, such as Building STEPS, College Bound, MERIT, and Urban Alliance, were frequently cited as the source of guidance for employment and post-secondary information.

"MERIT was really involved, because when I started, it was in my 7th-grade year to my 12th-grade year, and they helped us apply to colleges. We went on college tours. We did a lot of things that had to do with the medical field. We went to the IMET building, which is downtown…and we did projects and experiments there. So they were a really big part of my decision."

"Back in high school we had a College Bound counselor, and we was in the College Bound program, so I already knew what I wanted to do and everything. So I sat down and talked to my College Bound counselor….And we basically assessed what I needed to do to get to college and what steps I needed to take to get to my career path and everything. So he took us on tours of colleges, or like surgical programs, where I’d be interested in everything. And, well, he pushed me towards my career."

Both students and teachers voiced concern about the lack of post-secondary counseling for CTE students planning to enter the workforce directly after high school. Even in schools that were CTE centers, teachers and students felt that there was an overwhelming push for everyone to attend college, which often conflicted with the premise of many CTE programs. One teacher described the tension like this:
“It’s kind of confusing because they have programs here that are designed to send everyone to college. And my question is, well, then why am I here? Why does CTE even exist if the goal is to get everyone to college? And I can get a kid a starting salary of $45,000 a year, because he’s good at what he does with his hands. Why do you keep insisting that the kid goes to college? I guarantee him a job in the mid- to high-$30s, and if I’m lucky, I can get him a job in the $40s. And yet, all they want to do is send kids to college, college, college, so that they can graduate and not get a job and have to work for $29,000 a year with their four-year degree. And the graduation rates for college from this school are abysmal.”

—CTE teacher, CTE entrance criteria high school

Students planning to use their CTE certification to go directly into the workforce often found themselves receiving college-going counseling as opposed to advice more suitable to finding employment or pursuing other post-secondary options, such as trade schools or credentialing programs. This often left students in need of career advice with limited resources to help them enter the workforce after high school graduation.

“They were really just pushing us to go into college. Which isn’t a bad thing, but at that time I didn’t see college being for me because I understood that with the career path, the certifications were a really big thing that the employers look for.”

It is important to note that some students shared instances when school counselors were available at their school, but for various reasons, students chose not to take advantage of their services. When asked about what type of counseling or advising he received in high school, one student admitted, “I wasn’t really interested back then, to be honest.” Another student shared, “I was kind of hardened, so I didn’t want to go there and talk to them like that…. They did try to come to me at one point in time, but I just didn’t kind of accept it.”
Marquise wanted to design video games when he enrolled in a CTE center with admissions criteria. As he recalls, he was asked to select a CTE program right before he started at the school in 9th grade. However, he did not register his preferences in time to have them considered and was placed in the auto mechanics program. He decided to just stick with it.

“Before I got into auto mechanics, I wanted to design video games, but the school didn’t have that, and I didn’t know. When I got auto mechanics, I just stuck with it. I thought I would just go through the career steps [for video game design] at high school because [it] was a vocational school, so they try to get you career ready. So I was going to do that, and I was going to go to Full Sail University in Florida.”

Marquise was not exposed to many real-world experiences in the automotive field as part of his program. Job-shadowing experiences in external auto mechanics shops were not available. Internships with Baltimore Gas & Electric (BGE) were available to certain students who were recommended by the teacher, but Marquise was not recommended for an internship.

“I would learn from the teacher, the auto mechanic teacher. That was about it. I didn’t have any [internships], but other students in the program did. BGE would come to the school looking for mechanic workers. Some students got pulled, some students didn’t... You had to be recommended by the teacher.”

The balance between ‘book work’ and ‘shop work’ was skewed toward book work. Students were much more engaged being in the shop and would sometimes “slack off” when it came to the book work, “so nobody really understood what was going on.”

“I would say that we should have a balance between book work, in the classroom work, and shop work. Sometimes it was spotty. We would be in the shop. We learned a lot in the shop.... We read the book, took some tests, went back in the shop, but for some people, that didn’t help. So I feel like it should be a balance.”
CTE AND HIGH SCHOOL CHOICE

According to Marquise, one factor when he applied to his high school was that it was a “vocational school” that tries “to get you career ready.” In fact, the availability of CTE programs is a key factor in school selection, as we found in our previous report, Calculated Choices.33

However, we also heard from student and parent participants in that study that there is a fair amount of confusion about the choice process and how to choose a school. The information City Schools provides in its annual Middle & High School Choice Guide is not sufficient for students and families to make informed decisions around choice. If it were, Marquise would have realized that video game design was not offered at the school he enrolled in and might have opted instead for one of the seven high schools that does offer this program.

INTERNSHIP OPPORTUNITIES

Some internship opportunities are available to students, often through external partner organizations like Urban Alliance, Building STEPS, or MERIT. For students without access to internships through partner organizations—like Marquise—it is usually up to them and their teachers to find internship opportunities. There are equity implications to this arrangement, as schools and teachers with stronger relationships to business and industry partners are able to line up opportunities with relative ease, whereas students in schools that lack strong existing partnerships are less likely to have that same access.

CTE teachers share widely divergent experiences around internships for their students:

“[I]t’s not something that has been done in the past, where the students go out and work in the field."

“The district does [organize] some [internships], and I do my own personal [outreach]. I’ve got a lot of friends in the industry, so when I need students getting hired and things like that, I’ll reach out to them. Sometimes it goes well, sometimes it doesn’t.”

“[In our last advisory panel meeting,] we had students talk about what they did in some of their internships this year. And they gave us feedback in terms of what they didn’t like about their internships, like how they felt like they weren’t necessarily being utilized in the best way, based on the things that they’ve learned. And so then it allowed our advisory panel to maybe reach out to their networks, to say, ‘Do you have some different types of positions?’ Or, ‘These students can do more than what we’re giving them credit for.’ Because sometimes, I think, too, folks out in industry, they have misconceptions about the students and what their ability levels are. And so you definitely kind of have to have an internal school process for identifying the right places for students to do internships, and then kind of having those good collaborations to make sure that the internship is meeting the needs of the students, and vice versa.

“But the key is to find people that are willing to take our kids in for internships. It is so hard. I mean, I’ve been trying to get them. We’ve been trying to think of ways we can get more internships.”

For students enrolled in CTE programs like cosmetology, having an internship is very important. Cosmetology has a requirement of 1500 hours for licensure, so students must have internships in order to earn their certification. If you are a cosmetology student, taking one 72-minute cosmetology course on every one of the 180 days in a school year for the three years of your CTE program, it is only possible for you to earn 648 hours with just your classroom experience. A cosmetology teacher we interviewed noted that she makes “her students go out and find an internship and report it back to me.” However, there is no standardized support system within City Schools for cosmetology teachers and students to find the internships that would allow these students to meet the requirements to earn their licensure.
Students in Marquise’s program took the Automotive Service Excellence (ASE) certification tests, but Marquise did not pass any of these tests. Marquise comments, “Really, it was just a hard test. A lot of the class didn’t pass. So we had, out of 18 students, probably three pass. It was actually a hard test.” Hespeculates that most students were not prepared for the material covered on the test.

Marquise did not receive much in the way of career or college counseling at his high school. He describes one experience sitting down with a school counselor during his senior year: “She was telling me to make sure it’s something I want to do before I do it, because you can’t get time back.”

Since graduation, Marquise has been looking for a job as a mechanic but has not been able to secure one, because he does not have the certifications an auto shop is looking for. Marquise explains:

“People want mechanics that are certified. Well, they want to see that certification paper, so they know that you mastered that skill. You can’t just go off word of mouth. Anybody could say they’re good at doing this and not be good at it.”

LITERACY AND NUMERACY

As with other entry-level jobs aligned to CTE programs, automotive service technicians need to read and do math at a certain level to be successful in their jobs—a reality that certification tests reflect. An entry-level job in automotive service might be comparable in literacy and numeracy requirements to that of an entry-level computer numeric controlled (CNC) machinist (see below).

<table>
<thead>
<tr>
<th>Sector</th>
<th>Entry-Level Occupations</th>
<th>Required Grade-Level Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biotechnology</td>
<td>Lab technician</td>
<td>11th-grade reading and math</td>
</tr>
<tr>
<td>Green Jobs</td>
<td>Brownfields remediation, weatherization</td>
<td>9th-grade reading and math</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>CNC machinist, welding</td>
<td>9th-grade reading and math by end of phase I training</td>
</tr>
<tr>
<td>Construction</td>
<td>Carpentry, electrical, and plumbing apprenticeships</td>
<td>8th-/9th-grade math</td>
</tr>
<tr>
<td>Healthcare</td>
<td>Patient transport, food services, environmental services, medical records, secretary</td>
<td>8th-grade reading and math</td>
</tr>
<tr>
<td>Maritime</td>
<td>Forklift, warehouse operations</td>
<td>8th-grade reading and math</td>
</tr>
<tr>
<td>Hospitality</td>
<td>Food services</td>
<td>6th-grade reading and math</td>
</tr>
<tr>
<td>Healthcare</td>
<td>CNA, GNA, pharmacy technician</td>
<td>5th-/6th-grade reading and math</td>
</tr>
</tbody>
</table>

Source: “Expanding Sector Employment Opportunities for Young Adults in Baltimore.” The Baltimore Workforce Funders Collaborative. February 2016

Maryland’s Howard County Public Schools recommends that students who enroll in its Automotive Technology program complete Algebra II in preparation for their Automotive Technology coursework.34

These reading and math proficiency requirements should be part of the conversation between students and their counselors or advisors during the school choice and program selection processes. The majority of 11th graders in City Schools read at or below 5th-grade level and do math below a 6th-grade level.

FIGURE 10: i-Ready reading and math grade-level placements for 11th graders35

Source: “Mid-Year Academic Performance Data 2016-17.” Presentation to the Baltimore City Board of School Commissioners Teaching and Learning Committee. 28 March 2017
“I would say that we should have a balance between book work, in the classroom work, and shop work. Sometimes it was spotty. We would be in the shop. We learned a lot in the shop…. We read the book, took some tests, went back in the shop, but for some people, that didn’t help. So I feel like it should be a balance.”
At the beginning of 10th grade, Shantel registered for the surgical tech program, one of three health programs available at the CTE center she attended, because she wanted to work in a hospital. She did not have any conversations with a counselor or advisor about her chosen program or what a career path might look like. Her primary motivator was the teacher, who was a surgical technician herself. Shantel felt close to her.

“She was our trade teacher but she was a real surgical tech, too. And she was certified for a lot of stuff. She was close to us. She told us stuff that she wasn’t really supposed to teach us yet. So she had us thinking like we was already in a real trade but we was just at the beginning…She taught us the laws. She taught us about our body parts. She taught us a lot of stuff.”

In the summer of 2016, Shantel got an internship through her school working the reception desk at the Johns Hopkins medical campus, which further fueled her interest in the medical field. She couldn’t intern in a surgical setting, because one must be at least eighteen to be present in an operating room. However, her grandmother urged her to volunteer at a hospital during the school year as well to get more exposure to the types of jobs available.

When she returned to school for 11th grade, she discovered that her surgical tech teacher—the one she had felt such a strong connection to—had left the school. The surgical tech classes were covered by a substitute for the entire year. When the school could not find a new teacher for the next school year, it closed down the surgical tech program and divided those students between the two other health programs at the school—pharmacy tech and dental tech. Shantel was placed in dental tech, even though she had no interest in that program. She explains:

“[The substitute] wasn’t teaching nothing. They just had to put us in something. They split us up. They put me in dental, and I didn’t want dental… and I couldn’t get dentistry certified because I was in there late, so it was nothing they could do. So my 12th-grade year, I just transferred… because my teacher left and we had a permanent substitute.”

Because she had completed only two years of her surgical tech program before it was shut down, Shantel could not earn the certification and four college credits that would allow her to enter the surgical technologist program at Baltimore City Community College with a leg up. Because she was starting a new program in her senior year, she could not earn a certification in a new program either. Still, she tried to transfer to pharmacy tech, but the school would not allow it. Shantel stopped going to class, because it seemed pointless, given that she couldn’t earn a certification.

“[I wanted] pharmacy. They didn’t let me though. I used to keep coming out of his class saying, ‘Get them to put me in.’ It was too late to get certified because they finally put me in a new class once the year was ready to be over… That’s why I ain’t go to class.”

She transferred to a small traditional high school across town for the remainder of her senior year.

Shantel has not worked since her graduation but still wants to pursue a career in the medical field. She applies for positions at hospitals but has noticed that “it takes a lot for them to ask you back.” Shantel believes she would be in a better position now if she had had a real surgical tech teacher in her junior and senior years.
Because of the way City Schools sequences and schedules CTE courses, these programs are particularly unforgiving for students pursuing certification. There is no time for a student to falter and still become certified.

FIGURE 11: Course sequences for two City Schools CTE programs of study

### Career Cluster/Program: Information Technology/Information Support and Services

<table>
<thead>
<tr>
<th>Grade</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th</td>
<td>IT Essentials: Fundamentals of Personal Computing, Hardware and Software (2 credits)</td>
</tr>
<tr>
<td>10th</td>
<td>Help Desk Concepts 1 (1 credit)</td>
</tr>
<tr>
<td></td>
<td>Help Desk Concepts 2 (1 credit)</td>
</tr>
<tr>
<td>11th</td>
<td>Supporting Desktop Operating Systems (1 credit)</td>
</tr>
<tr>
<td></td>
<td>Supporting Desktop Applications (1 credit)</td>
</tr>
<tr>
<td>12th</td>
<td></td>
</tr>
</tbody>
</table>

### Career Cluster/Program: Academy of Health Professions: Nursing Assistant Option

<table>
<thead>
<tr>
<th>Grade</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th</td>
<td>Foundations of Medical and Health Science (1 credit)</td>
</tr>
<tr>
<td>10th</td>
<td>Structure and Functions of the Human Body (1 credit) Certified Nursing Assistant (1 credit)</td>
</tr>
<tr>
<td>11th</td>
<td>Clinical Internship (1 credit)</td>
</tr>
</tbody>
</table>

Source: Baltimore City Public Schools

For instance, if an information and support services student does not pass the ‘Help Desk Concepts 2’ course, it is unlikely that she will have another opportunity to take it again before graduating. Courses are sequential—they build on each other—so she would not be able to move on to the ‘Supporting Desktop Operating Systems’ course in the fall of her senior year and double up on ‘Help Desk Concepts 2’ and ‘Supporting Desktop Applications’ in the spring of her senior year.
THE IMPORTANCE OF TEACHERS

CTE teachers are often the key factor in whether a student's experience in a program is productive and sets him up for success after high school. Student interviewees found teachers to be motivational forces, role models, career advisors, networkers on their behalf, experts in their fields, and trusted friends.

Teachers are central to the lives of their students during the K-12 years; their importance has been a key theme in every study the Fund has conducted to date. In City Speaks: Community Voices on Baltimore Schools (2014), Baltimore residents told us about the great teachers they encountered who are heroes in their school communities—and also about those with good intentions who enter City Schools not equipped with a true understanding of the lives our students lead and the forces that shape the context for their lives. In Building a Bright Future: Understanding College Readiness in Baltimore City Public Schools (2015), we heard how City Schools students and alumni rely heavily on trusted teachers as informal post-secondary advisors, particularly with the documented shortage of school counselors. Similarly, in Calculated Choices, parent and student participants told us how teacher guidance often factors into high school choice decisions. Effective teachers who truly care about their students as people are deeply valued by the students they teach.

In our interviews with recent CTE students from City Schools, Shantel and many others indicated that the teacher was one of the primary reasons they chose the program they did.

"I wound up picking STARS GIS because I was familiar with the teacher."

"My teacher of the pathway...really wanted to help you and stuff like that, so she made it easier.... I felt comfortable around her, and so that's why I wanted to choose that class because I felt like if I needed help on anything, or didn't understand something, she would talk me through it."

While great teaching or a close relationship with a teacher can motivate students to engage with their subject, the opposite is also true. We heard a range of stories about teachers' influence on student desire to engage in CTE classes.

"(M)y 10th-grade year, my law teacher, Mr. H—, he was...one good law teacher. He actually breaks everything down to you.... If he could have taught me all my years, it would have been good, but I only had him for 10th grade.... Anything in his class like pop quizzes, anything, he would do open notes, but I mean, we learned it so good from him, you don't need notes, because you know it, and you could remember it."

"If I had to rely on anyone for mentoring, it would be my teacher, because his words and his guidance oftentimes were what kept me engaged in school. He had a unique way [of] going about education that kept students engaged, and not only engaged but wanting to go forward with education. He piqued my interest."

"I got really put off because we didn't have a great teacher after Mr. H— left. It was bad."

"So our instructor wasn't so much experienced in what she was teaching. So she was just kind of feeling her way through it, which kind of discouraged a lot of people, a lot of my peers in the class. Because if they weren't understanding something—she was kind of learning as she was going, so she couldn't really break it down."
Many CTE students are with the same CTE teacher for the entirety of the three-year program. Students come to rely on the close relationships they form for support and counsel about their next steps after they leave school.

“[My] nursing instructor, when I was in high school, she’s an RN. She was my CNA teacher, and she was just encouraging me because a lot of people was asking me, ‘Why don’t you want to go get your MD? Why don’t you want to be a doctor?’ And I was like, ‘I don’t want to be a doctor. I’m going to do more for my patients.’ Meaning I want to have direct patient care, and not saying that physicians don’t, but I feel like my heart is just nursing.”

“My teacher [gave me counseling]…. Basically, the steps I wanted to complete, so that I could get to where I wanted to be.”

“My law teacher…Mr. M,—, he was like our counselor and our trade all in one. So he basically helped us and pushed us forward.”

“[O]ur teacher, she was very phenomenal. She actually talked to a lot of us, and she wanted to make sure this was what we wanted to be…. So she really did help out and ask me—help us think if that’s what we really wanted to do as a long-term career or not.”

Most of the CTE teachers we heard from view themselves as their students’ champions.

“[M]y students…love my class for one reason. We get to talk. We get to explore. We get to engage. And to me, even when I taught middle school, they want to compare their ability to think and analyze in a legal-type manner with someone who does it for a living. They love the war stories I throw out: ‘Well, I prosecuted this case—’ and such and such. But at the same time, they love to test their mettle, to see where they’re at. And it pays off, because at times where I least expect it, they’re coming back with information or analysis, that I’m like, ‘Wow.’”

“See I look at every kid….in my classroom like my kids. They’re not my biological children but I’m committed to their future.”

Given that students hold their teachers in high esteem, it becomes problematic when teachers—even those who see themselves as champions for their students—hold views of their students that could limit expectations.

“[A]gain, I think it goes back to that apathy and that complacency….Even though [the students] complain and say, ‘I want to make more money,’ but [they] also don’t necessarily want to do the things that [they] have to do.”

“So just the things that they are not able to do. And in some cases, not willing to do because they feel like, ‘There’s nothing that happens as a result of me not doing it.’ I mean, and then there’s no effort and there’s an apathy for education.”

“Half of them are not invested in their future.”

“Th[ey] don’t know how to show up. They don’t know how to show up on time….For example, school starts at 8:30 and if you come here at 9 o’clock, and you walk around, most classes are like 25% full by 9 o’clock, so they don’t show up on time is the first thing. They don’t have a sense of responsibility.”

In CTE, in particular, the importance of teachers can be seen in the negative impact on students’ certification prospects when a teacher leaves.

“We couldn’t finish [the phlebotomy program], because the lady had left us at the end, so we didn’t finish it. So that’s why I was doing that program to get a certificate.”

“[O]ur teacher, she came late in the quarter. So they didn’t make us take their test because they thought it was unfair for us to take their test if she wasn’t there for the whole quarter for us to prepare for the test.”
WHAT HAPPENS NEXT?

How can our schools deliver on the promise of career and technical education to provide students with a clear path to a well-paying job after high school?

We asked interviewees directly what could be done to make CTE work better for students. We encourage City Schools, the City of Baltimore, and the Maryland State Department of Education to listen to those with first-hand experience. Here are the ways interviewees felt CTE could be improved to become a more productive, meaningful career preparatory experience:

STUDENT/TEACHER RECOMMENDATION: Provide year-round, paid internships to all CTE students.

*Fund recommendations for implementation:* Students should be placed with employers for long-term paid internships through an intentional partnership between City Schools and YouthWorks. City Schools should staff each CTE center with internship coordinators, whose primary role is to coordinate work-based learning with YouthWorks, other external partners, and CTE teachers and students.

STUDENT/TEACHER RECOMMENDATION: Give students in middle grades more and better information about the CTE options available to them in high school.

*Fund recommendations on implementation:* City Schools should provide a comprehensive overview of CTE to 7th-grade students. The overview should include:

- Names of the career clusters and programs offered;
- For each program—course names, descriptions, and sequences;
- Schools where each program is offered;
- Intended outcome for each program (e.g., community college with articulated credit earned, four-year degree, apprenticeship, immediate entry into workforce with earned credential); and
- Actual higher education and employment outcomes for each program offered.

This information should be offered as a workshop by the choice liaison at each middle school, as well as at the choice fair, and it should be included as an insert in the Middle and High School Choice Guide and as a downloadable, printable feature on the City Schools website. Currently, students and families have too little information about what CTE programs are, how they operate, and what they can realistically expect from them.

STUDENT RECOMMENDATION: Provide a better balance between 'book work' and 'hands-on work.'

*Fund recommendations for implementation:* The College and Career Readiness Office should spearhead the development of curricula that map out a balance between book work and hands-on experience in every CTE program. Schools and CTE teachers should also commit to giving their students exposure to their fields outside of the school building.

STUDENT RECOMMENDATION: Make sure CTE teachers are committed to their students and are willing to engage with and coach students one-on-one.

*Fund recommendations on implementation:* Given that CTE students prefer to seek career advising from their CTE teachers, it would be helpful to build time for advising—outside of regular class time—into teachers’ schedules.

It is notable that these recommendations from students and teachers are strikingly similar to a number of elements the Association for Career and Technical Education (ACTE) outlines in its 2018 Quality CTE Program of Study Framework. ACTE outlines twelve elements that contribute to a high-quality CTE program. Many of these elements align with what we heard from students and teachers, including:

- **Prepared and Effective Program Staff,** who demonstrate commitment to their field, who engage in ongoing professional development, and who are provided with the resources and supports needed to lead a high-quality CTE program.
- **Engaging Instruction,** which includes academic and technical skills with real-world scenarios and experiences.
- **Student Career Development,** which involves career planning and decision-making prior to entering a program.
- **Work-based Learning,** which supports meaningful interactions and work experiences with industry professionals that are connected to a student’s career goals.
FUND RECOMMENDATIONS:

If we really want CTE in City Schools to give students a leg up to a meaningful, well-paying career, the district needs to implement CTE as intended for today’s labor market. Much of what we call CTE in City Schools looks like the old vocational-technical model developed to give students not bound for college a pathway to a family-sustaining job.

Today, most of the jobs that CTE programs are aligned with require additional training and coursework beyond an initial certification earned in high school. CTE students need to understand that college or another type of postsecondary training program is the most likely next step for those looking to earn a family-sustaining wage—and that the message that college isn’t for everyone is the wrong one to send.

An overhaul of CTE in City Schools is in order, beginning with a wholesale re-examination of the programs offered, how they align with the Baltimore region’s labor market needs, what the culminating credentials or credits are for students who complete them, and what the post-graduation prospects are for students who earn those credentials and credits. City Schools also needs to look at the distribution of programs, facilities, staffing models, program structure, scheduling, and entrance requirements for students. This full-scale review may lead to smaller overall CTE enrollment with better staffed and better funded programs in fewer, more centralized locations.

The Fund recommends that City Schools take the following actions in order to begin re-envisioning CTE and build a system that positions CTE graduates as assets to our regional labor market:

1. Locate nearly all CTE programming at two or three easily accessible centers. Students enrolled in CTE programs would take their CTE classes at these centers and core academic classes at their home schools. Concentrating CTE programs at a few centers and scaling them back elsewhere would mean maximizing facilities investments and CTE instructor time and expertise. City Schools could hire administrators with deep CTE expertise and experience to lead these centers. Research indicates that this model produces the best academic and workforce outcomes for students.19

2. Establish program-specific academic prerequisites for CTE programs. Other Maryland counties have prerequisite courses for their CTE programs, and students who want to enroll have to maintain a C average or better. Most entry-level jobs aligned to CTE programs have literacy and numeracy proficiency requirements for success. When students are engaging in career exploration and the high school choice process in middle school, their counselors and advisors should have honest conversations with them about what their career goals will require of them academically. The way to set students up for success is to communicate honestly about their program options while implementing programs and pipelines that graduate students who are ready for the next step. Establishing program-specific prerequisites will support that outcome.

3. Develop course schedules for students that align with their goals. Students told us that they needed more than a single 45- or 72-minute period each day to master their CTE course material. City Schools should use block scheduling to maximize CTE students’ time in their CTE classes. For instance, CTE students might spend three hours in CTE courses at a center three times a week, while spending the rest of their time (including two full days) in academic core courses at their home high school. This kind of block scheduling would add 50% more time in CTE courses for CTE students.

4. Invest in staffing models that make sense. Many CTE teachers we interviewed told us that they teach only 15 to 30 students in just three classes per day. Among the benefits of consolidating CTE programs and instructors in a few centers would be maximizing course loads for teachers. With at least 1,000 students participating in CTE courses in each of three locations, each center would need at least one and possibly several dedicated teachers per program. Instructors who teach the same subject in the same building would have more opportunities to form professional learning communities and to collaborate with one another. Having multiple teachers of the same CTE subject in the same building should also eliminate any situation where students could not earn their certification because of the absence of an industry-certified teacher.
Each center should also have a small team of work-based learning coordinators on-site to match students with internship opportunities. Work-based learning coordinators would report to one or two staff members in the City Schools Office of College and Career Readiness whose sole function would be to develop internship opportunities with YouthWorks and industry partners (as part of a larger team dedicated to working with partners in a number of ways).

Finally, students need comprehensive counseling and advising to help them realize their post-secondary goals. Like every other high school, CTE centers should staff one counselor for every 250 students, and counselors should be well-versed in the full range of post-secondary opportunities aligned with the CTE programs offered. They should know union apprenticeships, local workforce development programs, credentialing organizations, articulated credits, and the certificate and degree programs available to students at community colleges and area universities.

5. Prioritize partnerships and communication with regional industry and employers. CTE programs should align with the regional labor market and local industry needs and priorities. For instance, business and industry partnerships can expand work-based learning and be a key resource for program improvement and development. Stakeholders in local industry and business should review curricula, ensure that information is aligned with the most up-to-date industry practices, and advocate in the larger community for programs connected to their industry.

Further, stakeholders can provide information to City Schools regarding projected needs in the regional labor market. The Mayor’s YH20 Mentoring program, which involves mentoring, job shadowing, and employment to create a pipeline to fill vacancies left by a wave of anticipated retirements in the water industry, is a great example of the type of programming that could be created in response to local industry needs. While the program is currently focused on individuals 18 to 24, similar programming could be tailored to high school students with the goal of entering the water industry after graduation.

CONCLUSIVE NOTE

In June 2018, the Fund for Educational Excellence submitted a request for the following data to aid in our analysis of City Schools CTE programming:

- Number of available classroom seats for each CTE program, by school and CIP number, Years: 2014-15, 2015-16, and 2016-17.
- Number and percent of students who applied for CTE programs through the City Schools choice process, by race, gender, school, program, and CIP number, Years: 2014-15, 2015-16, and 2016-17.
- Number and percent of students waitlisted for, or not admitted to, CTE programs through the City Schools choice process, by race, gender, school, program, and CIP number, Years: 2014-15, 2015-16, and 2016-17.
- Number of internships available to CTE students, by school, program, and CIP number, Years: 2014-15, 2015-16, and 2016-17.
- Number and percent of students who completed a CTE program course sequence, by race, gender, school, program, and CIP number, Years: 2014-15, 2015-16, and 2016-17.
- Number and percent of students who attempted and passed a CTE certification exam, by school, program, and CIP number, Years: 2014-15, 2015-16, and 2016-17.
- Number and percent of CTE completers who began a course of study at a community college or technical school post-graduation, by school, program, and CIP number, Years: 2014-15, 2015-16, and 2016-17.

In September 2018, our data request was approved, and we signed a memorandum of understanding for receipt of these data with Baltimore City Public Schools. Some of the data were provided to us on February 1. Upon review and analysis, we plan to issue a series of briefs informed by these data on re-envisioning CTE in City Schools.
THANKS

Chuck Adkins
Sadiq Ali
Stephanie Amponsah
Matt Arnn
Joseph S. Bernhart, Jr.
Courtney Bettle
Whitney Ward Birenbaum
Sherina Bonaparte-LaTore
Darrin Brozene
Candace Chance
Emilie Cherry
Jessica Cook-Thomas
Greg Couturier
Pete DeCandia
Coryne Deliberto
Nikole Divito
Sharon Drevitch Dondes
Tsanonda Edwards
Ruth Farfel
Janelle Gendrano
Katie Graul
Douglas Handy
Danny Heller
Tina Hike-Hubbard
Melanie Hield-Wilson
Joni Holifield
Angelique Jessup
Debora Johnson-Ross
Bess Keller
Mike Kelly
Kevin Leary
Susan Malone
Ebony McFadden
Natasha Muhammad
Heather Naviasky
Mesha Newton
Kelly Oglesbee
Amanda Olmstead
Al Passarella
Rachel Pfeifer
Tia Price
Lynn Rhue
Nikki Rucker
Danny Russell
Anthony Schell
Roger Schulman
Jonathan Smeton
Craig Spilman
Michael D. Thomas
Charmayne Turner
Nicole Watford
Stan Wolfe
Kate Wolfson
Nicole Yetfich

ENDNOTES

1. Email from Stanley Wolfe (Interim Director—College and Career Readiness Office, Baltimore City Public Schools) to Corrie Schoenberg.
8. We define underemployment as a person not having enough paid work to earn a living wage.
12. However, MLDSS data do not include federal employees.
16. Email from Stanley Wolfe (Interim Director—College and Career Readiness Office, Baltimore City Public Schools) to Corrie Schoenberg.
21. High schools with academic entrance criteria require a minimum composite score of 610 to be considered for admission. CTE centers with academic entrance criteria require a minimum composite score of 435 in order to be considered for admission. A student’s composite score is comprised of course grades, PARCC percentile, and attendance rate—with different weights depending on the school. The CTE centers with academic entrance criteria are Mergerthalier, Carver, and Edmondson-Westside.
22. Students who need additional academic and/or behavioral supports are often placed in alternative schools or programs if attending their initial high school becomes too difficult.
23. The inter-rater reliability statistic, a measure of agreement, validity, and consistency among team members was a high of .78 (78%). This reliability statistic of .78, also referred to as Cohen’s kappa statistic, is rated as “good agreement” according to University of California at Los Angeles qualitative researchers and developers of the qualitative analytical online application Dedoose.
24. Profiled students’ names have been changed to protect their privacy.
25. Names of the high schools attended by the students whose stories are featured in this report are redacted.
32. Email from Dr. Rachel V. Pfeifer (Executive Director, College and Career Readiness, Baltimore City Public Schools) to Corrie Schoenberg.
35. This analysis excludes students from several academic entrance criteria high schools (Poly, City, and Westers), as well as students enrolled in charter schools.
41. A Classification of Instructional Programs (CIP) number provides a taxonomic scheme that supports the accurate tracking and reporting of fields of study and program completions activity. Each CTE program has a CIP identifier used for data-tracking.
ANALYSIS & ENGAGEMENT ADVISORY COMMITTEE

Yolanda Abel
Adina Amith
Courtney Bettle
Whitney Ward Birenbaum
Sharicca Boldon
Sherina Bonaparte-LaTore
Darrin Brozene
Faith Connolly
Deniene Davis
Nakeia Drummond
Tina Hike-Hubbard
Melanie Hood-Wilson
Charelle James
Bess Keller
Ebony McKiver
Melisa Mitchell
Al Passarella
Michael Rennard
Joanne Robinson

FUND FOR EDUCATIONAL EXCELLENCE BOARD OF DIRECTORS

Betsy Nelson, Chair
Adina Amith
Ilene Berman
Bonnie Copeland
Jill Feinberg
Beth Felder
Tina Hike-Hubbard
Cinda Hughes
Michael Isch
Jean E. Lewis
Jim Mathias
Sara Milstein
George Murnaghan
Roger Schulman
Kimberly J. Wiggins
Scott Robert Wilson
Dr. Maxine Wood

FUND FOR EDUCATIONAL EXCELLENCE

BROKEN PATHWAYS

ffee.org • 410-685-8300
Fund for Educational Excellence
800 North Charles Street, Suite 400
Baltimore, MD 21201