W.F. West High School CTE Audit

Prepared for the Chehalis School District

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Career and Technical Education Needs Assessment

Introduction: Why Chehalis School District is focused on CTE, and how this connects to the Student Achievement Initiative.

In 2013, the Chehalis Foundation partnered with the Chehalis School District (CSD) to implement a comprehensive K-12 career and college readiness initiative: The Student Achievement Initiative (SAI). As part of the SAI, the district set a goal for 60% of its graduates to receive a meaningful post-secondary credential (degree or certificate). This goal aligns with The Washington Roundtable's goal of 70% of Washington students having a postsecondary credential by 2030. The Roundtable's 2016 report provides substantial social and economic evidence to support the need for more Washington students to obtain a postsecondary credential in order to contribute to the state's growing economy. As part of this work, district leaders have acknowledged that the path to postsecondary success begins much earlier than college in a student's educational career. Research supports the proposition that students in middle school should be considering their career interests, and then enroll in high school courses which align with career opportunities once they have graduated. Career and Technical Education (CTE) courses offer the opportunity for students to begin a meaningful pathway to employment while still part of the k-12 system.
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Traditionally, high school graduates moved into a "white collar" or "blue collar" track. Generally, the white collar track students went on to college and the blue collar students did not. There were plenty of ways for students with no credential past high school to be successful and obtain family wage jobs, however, which supported the model. In today's competitive international economy most family wage jobs require a credential beyond high school. Workers who want to maximize their future income need more than a high school diploma. This is true regardless of whether their goal is to be a welder, diesel mechanic, medical technician or physicist. The SAI is focused on preparing every Chehalis student with the tools to go beyond a high school diploma and to be successful in earning a credential, whether it be a technical certificate or a college degree.

The Chehalis district has, over the last 15 years, developed one of the top STEM programs of any comprehensive high school in the state. STEM fits perfectly under the SAI because the remarkably broad science, technology, engineering and math courses at WF West open up college and career opportunities for more Chehalis students. STEM is not separate from the SAI; it is a supportive part of the SAI. The same is true of the CTE program. Maximizing the opportunities for Chehalis students to be exposed to a broad array of courses providing career and technical training will result in more Chehalis

students prepared to go on and be successful in seeking credentials past high school and maximizing their career opportunities in life.

The Chehalis school district is working to develop the CTE program to be on a par with the success of the STEM program, and to have both be integral components of the SAI. The district had made a sustained commitment to providing a comprehensive education to all students in their community. As part of their research-based initiative, district leaders have recognized the need to focus efforts on the District's CTE program. The outcome of this work will include a detailed report to guide CTE and school leaders in developing their 5 Year Plan for program implementation and improvement.

Research Questions

1. What are the current program components and offerings within the Chehalis School District (CSD) CTE Department?
2. How does the CSD CTE program align with local and statewide workforce needs?
3. How does the CSD CTE program align with national promising practices research on CTE programs?
4. What recommendations could be made to support greater alignment between the CSD CTE program, national promising practice research, and local workforce needs?

Methodology

Based on the need for multiple types and sources of information required to create comprehensive understanding, researchers conducted a mixed methods research design focused on the intersection of CTE and employment. While the quantitative data collection provided a solid framework for understanding the existing landscape of CTE and economic and workforce development, the qualitative study provides deeper insight into less quantifiable areas of need specific to the CSD. Specifically, focus groups allowed researchers to develop a region-specific understanding of employer planning that may impact workforce demand, and community development projects that will impact the workforce. The opportunity to interview CTE leadership also provided valuable insights into current programming that will help inform decision making. Additionally, qualitative research allowed for the collection of rich, descriptive data (Creswell, 2013), that explored the underlying connections between CTE, post-secondary institutions and workforce needs in Lewis County.

Researchers began by working with the CSD CTE staff and leadership to create the primary research questions to inform the needs assessment. Based on the information

provided from project leaders, we developed the following research questions as a starting point:

1. What are the current program components and offerings within the Chehalis School District (CSD) CTE Department?
2. How does the CSD CTE program Align with local and statewide workforce needs?
3. How does the CSD CTE program align with national promising practices research on CTE programs?
4. What recommendations could be made to support greater alignment between the CSD CTE program, National promising practice research, and local workforce needs?

Literature Review

Several studies have focused on the economic impact of higher education. Over the past 10 years, our nation has been recovering from a recession that left many people unemployed, and others wondering what qualifications they might need to adapt to the changing employment landscape. Policy makers, educational leaders, and organizations including the Bill & Melinda Gates Foundation and The Lumina Foundation have been actively engaging in discussions about how to increase postsecondary success, and how to create more equitable opportunities for our diverse nation. Additionally, all community stakeholders have recognized that as the needs of the workforce change, so must our system of higher education. In a 2013 report from the Lumina Foundation, researchers wrote, "Perhaps the clearest evidence about the need to increase high education attainment comes from the fact that employers cannot find people with the skills they need to fill all of their current job openings, much less those that will be created in the future." (p.3). They continued, "The essential skills for success in today's economy are critical thinking skills-abstract reasoning, problem solving, communication, and teamwork. These are precisely the skills that are needed to build strong communities and societies wherever one lives." (p.4).

In a similar report, *A Projection of Jobs and Education Requirements Through 2018*, researchers from the Georgetown University Center on Education and the Workforce shared that, as a nation, "our ability to match education alternatives with career options is woefully underdeveloped." (2010, p.1) They continued to present a compelling argument for the alignment of education with trends in the workforce, noting, "Good pay and benefits, then, are linked to the sequence of postsecondary educational attainment, achievement, workplace training, and the use of technology on the job." (p.2) In this 2010 report, researchers projected opportunities for job openings in specific fields through 2018 for different levels of postsecondary education, finding that 26% of the job openings for engineers and technicians, 25% for healthcare practitioners and technical occupations, 21% for healthcare support occupations, and 21% for installation, maintenance and repair occupations could be filled with holders of Associate's degrees nationwide. The authors concluded their article by writing,

> Obtaining a good job-one capable of providing a family-sustaining wage-has become the ultimate standard for educational adequacy. The mass postsecondary educational system has arrived, leaving academics to debate over "college for all." Experts might contest whether everyone needs some college education-but the labor market clearly has linked middle-class employability to postsecondary education and training." (p.110).

Similarly, in a 2017 presentation to the Washington Roundtable and Washington Business Council leaders, The Boston Consulting group shared this infographic to help conceptualize the growing demand for qualified employees facing the state over the next several years. The presenters proposed that there will be over 740 thousand jobs by 2021 that will need to be filled, with a substantial gap in the number of qualified employees to fill those positions (Figure 1).
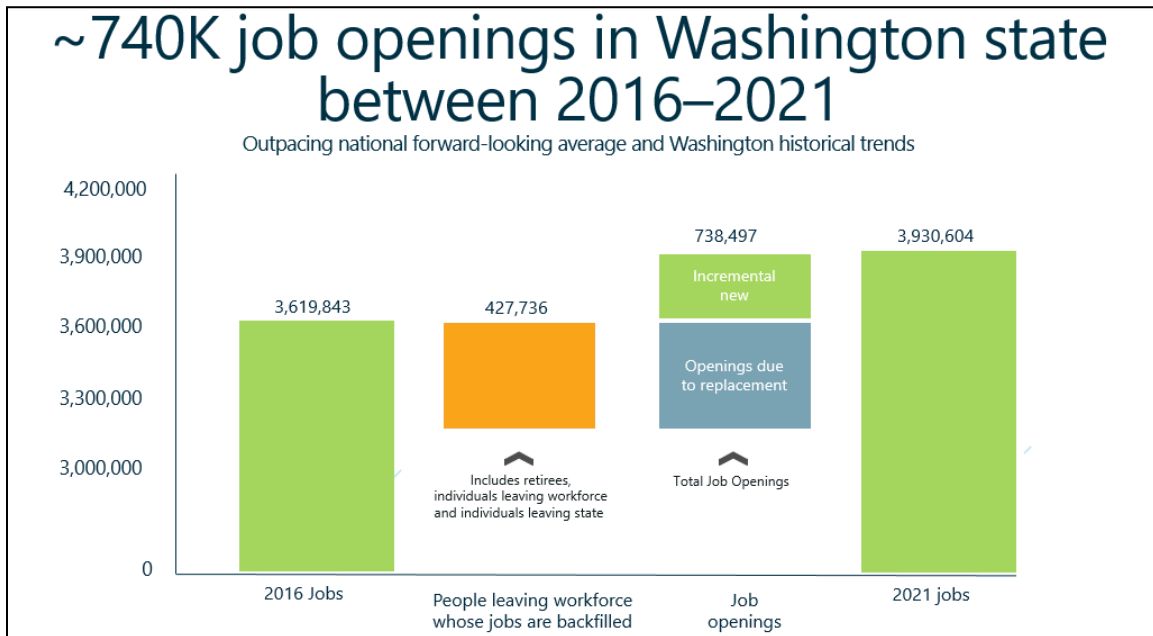

Figure 1. Boston Consulting Group Estimate of job openings in Washington State. Graphic from WKWJ Presentation

Holzer (2016) suggested that high-quality career and technical education opportunities in the U.S., such as "sectoral" training and work-based learning, "have not been developed to the extent possible to provide students a wider range of pathways to careers from which to choose." Efforts to improve these outcomes must "focus on three goals: (1) improving completion rates at our public colleges by strengthening student supports; (2) expanding postsecondary options, at the bachelor's level or below, that have labor market value; and (3) developing additional pathways to good-paying jobs through work-based learning and high-quality career and technical education, beginning in secondary schools." (Holzer, 2016)

The World Economic Forum's Jobs of Tomorrow Report (2020) adds that there will be a greater demand for jobs in the green economy, product development, cloud computing, and various fords of computer engineering. Specific positions include AI specialists, data scientists, and full stack engineers. Careers that focus on human interactions and the care economy, such as sales, content production, marketing, and human resources, are also

projected to grow in the share of the overall job market. Jobs that include a large percentage of manual labor and basic cognitive skills, such as data input and processing, are expected to decrease, partly due to the increase in applicability of automation and artificial intelligence. As the economy shifts to rely heavily on automation, the skills of workers will also shift (McKinsey Global Institute, 2018). Workers with the skills to manage automation and artificial intelligence, including technological and programming skills, will be in higher demand in the coming decade. There will also be a broader demand for workers with problem solving skills and creativity, which currently are sought after skills in technology and engineering industries.

History of CTE
There is a growing body of evidence to substantiate the value of Career and Technical Education (CTE) as part of the basic education of students in the United States. While the conversation has changed over the past 10 years, the content and intention behind CTE courses has remained consistent: to provide students with opportunities to develop the skills and knowledge necessary to earn a living wage in high-demand technical, mechanical, and labor industries. Malkus and American (2019) suggested that CTE, once labeled "vocation education" carried a social stigma that perpetuated the tracking of students who were not perceived as "college going," often based on socioeconomic status, race, and gender. Vocational education was seen as "a step backwards for students…rather than the [leading them towards] careers of the future…" (p.3). This perception has been changing as workforce needs across the country have changed. Following the most recent recession, employers in Washington State have struggled to fill job openings with highly qualified, skilled employees. Many of these jobs require 2-year college degrees, apprenticeship, and trade certifications, and offer employees a pathway to increase their earnings and level of employment over time.

The shift from the stigmatization of CTE to the current climate in Washington State, driven in part by Governor Jay Inslee's Career Connect Washington Initiative, has been gradual, research based, and bolstered by public relations and industry interest. Advocates such as the Association for Career and Technical Education have shared promising statistics about CTE's ability to increase graduation rates, academic motivation, course taking, and earnings (Malkus & American, 2019). These authors note that CTE is now seen as, "a necessary and potentially viable path forward for students who have been poorly served by a college-for-all culture." (p.3).

One challenge uncovered regarding the history and development of CTE is the lack of Nationally recognized and research supported pathways for CTE students. Stone and Lewis (2012) noted, "Understanding what is called career and technical education (CTE) in the United States should begin with recognition of the fact that the United States has

no national system linking education and the workforce. Rather, CTE today is a non-system built upon a series of ad hoc efforts begun in 1862 to address education for the workplace" (p.254). Stone (2017) continued, "A successful career pathway that serves the needs of many, if not all, students requires supportive state policy and a well-articulated system that brings key institutions together in effective partnerships grounded in extensive and intensive career development with teachers who are knowledgeable and effective in the delivery of a world-class technical curriculum." As a result of the existing unclear organizing structure, many proponents of CTE courses have struggled to meaningfully incorporate CTE into high schools across the nation. However, there are states, and districts, committed to increasing the capacity of school districts and communities as they recognize the workforce needs and help organize CTE courses into viable pathways.

National Best Practices Review

Across the country, educators and policy makers are attempting to strengthen career pathways by improving programming and increasing the rigor of coursework. Lowry and Thomas-Anderson (2017) cited President Obama's Community College to Career Fund as one opportunity to "[make] substantial headway in promoting industry partnerships to foster career readiness and job creation for trained workers." As a result, there are expanding opportunities for students to learn in the workplace through internships, apprenticeships, and job shadowing. These shifts highlight the current National focus on equity access to education, and promote the understanding that the needs of communities are connected to the educational initiatives and priorities of school districts. These ideas can be seen in new federal legislation: the fifth reauthorization of the federal Carl D. Perkins Career and Professional Education Act (Perkins V), which went into effect on July 1, 2019. Perkins V emphasizes workplace-based learning, post-secondary training, industry credentials, access for students from special populations, and programs that prepare students for careers in science, technology, engineering, and math (STEM). (CRPE), 2019, p. 1). As part of this legislation, schools will be required to conduct a Comprehensive Local Needs Assessment (CLNA) of their CTE program, and will use the assessment as a framework to guide their CTE program development (Appendix A). The CLNA is aligned with the expectation of the CRPE. Included in CRPE are several components of rigorous and systematized CTE programs[1]:

- o *Connect students to in-demand, living-wage careers*
  New CTE programs develop students' competence across a wide range of technologies and skills. Some are 21st-century careers, but others are not technical at all; they may be humanities-based fields, such as performing arts and

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[1] List taken directly from the Center on Reinventing Public Education, 2019, PP.3-4

law. All programs should connect students to living-wage careers that are in demand regionally and/or nationally.

o *Prepare students for post-secondary success*
Rather than provide alternatives to students considered unlikely to succeed in post-secondary education, new CTE programs intentionally prepare students for career and college.

o *Deliver a relevant learning experience*
Career and technical coursework is typically hands-on and interactive. New CTE programs often let students drive their own educational experience. Some programs offer project based, problem-based, or place-based curricula that make each student's education relevant and applicable.

o *Focus on equity*
Vocational education used to be a track for students considered unlikely to succeed in a traditional education program. Innovative CTE programs recognize the value of career connected learning for any student and ensure that they are not excluded from high-value, CTE opportunities.

o *Use community resources*
New CTE challenges the notion that education must happen within school walls by pushing the boundaries between schools and the community. These programs collaborate with employers, universities, trade unions, city agencies, and others to design learning experiences that result in industry-recognized skills. They also leverage community assets and resources to launch and sustain learning experiences.

o *Develop responsive, sustainable programs*
Innovative career pathway providers know that credentialing standards and careers change over time. They regularly review the relevancy of their curricula and update their offerings when needed. Some have sought out creative governance models to deliver a high-quality education at scale or make programs accessible across district boundaries.

In a 2017 article titled, *The Status of Career and Technical Education Undergraduate and Graduate Programs in the United States,* the authors confirmed several of the findings from CRPE's work, while also noting the importance of preparing teachers for the rapidly changing climate of modern CTE. The authors shared, "The second most

common trends reported were the changing certification requirements at the state and federal levels, accreditation changes that necessitated curricular transformations, and the increase in and changing nature of teacher assessments at both preservice and in-service levels, such as certification/licensure assessments, that require teacher preparation programs to update their curricula." (Fletcher & Gordon, 2017, p. 249).

In addition to CRPE's list of essential CTE program components and a recognition of the need for teacher preparation programs to remain forward thinking, a collaboration of education and workforce organizations developed to address CTE programming at the National level: State Leaders Connecting Learning to Work, Council of Chief State School Officers (CCSSO), the Education Strategy Group (ESG), & the American School Counselor Association (ASCA). These organizations determined that, "The student supports provided by effective career advising and development are essential for helping learners understand their career choices and make the best decisions for their futures" (2018, p.2). This collaboration made several recommendations, including building capacity for school counselors to serve all students, offering school counselors professional development focused specifically on career learning, and connecting counselors to resources within the community that might offer real world opportunities for students.

These organizations also highlighted the need for a coordinated effort between communities and schools, and noted that awareness of CTE pathways should be vertically articulated, with elementary students experiencing a "seamless progression from career awareness and exploration to career advising and development" (p.26). This scaffolded pathway should continue into postsecondary opportunities, with k-12 school leaders, counselors, and teachers collaborating with college faculty to identify consistent supports and opportunities for student learning.

These conversations, focused on best practices for CTE, are helping to create a more systematic way to approach critical learning pathways. In addition to developing these pathways, researchers and educators also recognize the need for student ownership and engagement in the development of CTE courses that reflect not only the needs of the workforce, but the changing demographics and interests of the students being served. Bransford, Darling-Hammond, & LePage (2005) commented on this, noting, "As such, it is not only imperative for CTE programs to consistently adapt to reflect the most current educational landscape, it is equally important for CTE programs to prepare their students to become adaptive experts who continue to update their skills and practices throughout their careers" (p.249). Stone (2017) articulated three types of skills students will need to be successful in the emerging labor market: Academic, employability, and technical. The

author noted, "In preparing youth for careers and continuing education beyond high school, CTE programs and pathways must ensure students' mastery of these three skill sets." (p. 158).

Benefits of CTE Programs
There are several benefits of incorporating a rigorous and structured CTE curriculum into students' academic pathways. As research into the systematization of CTE programs has become more prevalent, so have efforts to articulate the quantifiable impacts of these courses on students, and the communities that support them. According to the Association of Career and Technical Education (ACTE) (2019), CTE serves 94 percent of all high school students, and more than 7.5 million secondary students have taken at least one unit of CTE credit. ACTE suggests that high school students involved in CTE are more engaged, perform better and graduate at higher rates. Gottfried and Plasman (2017), in a study exploring high-school drop-out and college going behaviors, found that taking CTE courses in 11th and 12th grade helped to decrease student drop-out rates and increase on-time graduation. Similarly, a 2014 study found that for the class of 2012, students who concentrated on CTE courses graduated at a rate 13-percentage points higher than the national adjusted cohort graduation rate of 80% (Southern Regional Education Board, High Schools That Work 2012 Assessment). Additionally, they found that eighty percent of students taking a college preparatory academic curriculum with rigorous CTE met college and career readiness goals, compared to only 63 percent of students taking the same academic core who did not experience rigorous CTE.

In addition to the academic benefits of participating in CTE programming, there are economic and social benefits to students and the community. In a study of 14 career academies, described as "CTE-focused schools within a school," researchers found a causal relationship between CTE programming and income benefits to students (Malkus & American, 2019). Kreisman and Stange (2017), confirmed these results, noting that students who focused on advanced CTE courses in high school earned 3.2 percent higher wages once they entered the workforce. Alfeld et al. (2013), in their study of work based learning opportunities, found that opportunities for students to engage in practical, applied learning helped them to increase their motivation, strengthen their understanding of the concepts needed to perform tasks, and develop a more clear awareness of the work environment and the attitudes and behaviors needed to be successful.

Work Force Analysis Summary and Review

Researchers gathered demographic data from the U.S. Census Bureau and The Lewis County Economic Development Council to better understand the needs of Lewis County, where Chehalis is one of the largest cities in population, and the county seat[2]. Overall, the Lewis County population has grown 5.5 percent since 2010. The largest city is Centralia, with a 2018 population of 17,060. Chehalis has a population of 7,633, and has seen its' population grow by about 1.5% annually over the past 4 years.

When compared with the state, the Lewis County population represents an older demographic, with a similar distribution of men and women, and a majority of the population identifying as white (Table 1).

Table 1. Lewis County Demographic Data

	Lewis County	Washington state
Population by age, 2017		
Under 5 years old	5.8%	6.2%
Under 18 years old	21.6%	22.2%
65 years and older	20.7%	15.1%
Females, 2017	50.0%	50.0%
Race/ethnicity, 2017		
White	92.3%	79.5%
Black	0.9%	4.2%
American Indian, Alaskan Native	2.0%	1.9%
Asian, Native Hawaiian, other Pacific Islander	1.4%	9.7%
Hispanic or Latino, any race	10.1%	12.7%

In Chehalis, approximately 84.9% of residents identify as white, and males comprise approximately 52% of the population. The poverty rate in Chehalis is 17.61%, and Native populations have more than twice the likelihood of living in poverty. Approximately 46.4% of Chehalis residents own their home, and the average earnings for a Chehalis resident are $30,380 per year, with males making, on average, $16,269 more than females. Additionally, the median household income in Chehalis was $40,330 during the most recent census, about $21,500.00 below the state average.

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[2] The most recent data is from the 2018 U.S. Census

Educational attainment data was also available for Chehalis, based on the 2018 U.S. Census 5-year survey (Table 2). Approximately 22.5% of residents received an associates or bachelor's degree from a 2 or 4-year college, and about 34% participated in some college, but did not graduate with a postsecondary degree.

Table 2

Education Attained	Count	Percentage
Less Than 9th Grade	167	3.4%
9th to 12th Grade	287	5.9%
High School Graduate	1,319	27.1%
Some College	1,667	34.2%
Associates Degree	517	10.6%
Bachelors Degree	580	11.9%
Graduate Degree	329	6.7%

Labor Force and Unemployment Outlook for Lewis County

Between 2014-2017, the labor force in Lewis County has slightly decreased by about 2% and is about 11% below the state average. Unemployment rates have decreased between 2017 and 2020, from 7.9% and 6.6% (Figure 2 and Figure 3). Although the recession was difficult on the Lewis County economy, there is a renewed optimism about opportunities for jobs in construction, trade, and hospitality. In 2018, there were approximately 26,240 nonfarm jobs in the county, an increase of approximately 2500 jobs from 2010, when the unemployment rate was 8.9%. The median hourly wage in 2017 was $20.15, below the state's median hourly wage of $24.89 and the state excluding King County median hourly wage of $22.00.

Labor Force Participation (16 years or older)

— Lewis County   — Washington State

63%   63%   64%   64%

55%   55%   54%   53%

| 2014 | 2015 | 2016 | 2017 |

Figure 2

Unemployment Rates

— Lewis County   — Washington State

7.9%   7.5%   7.7%   6.6%

5.6%   5.3%   5.3%   4.4%

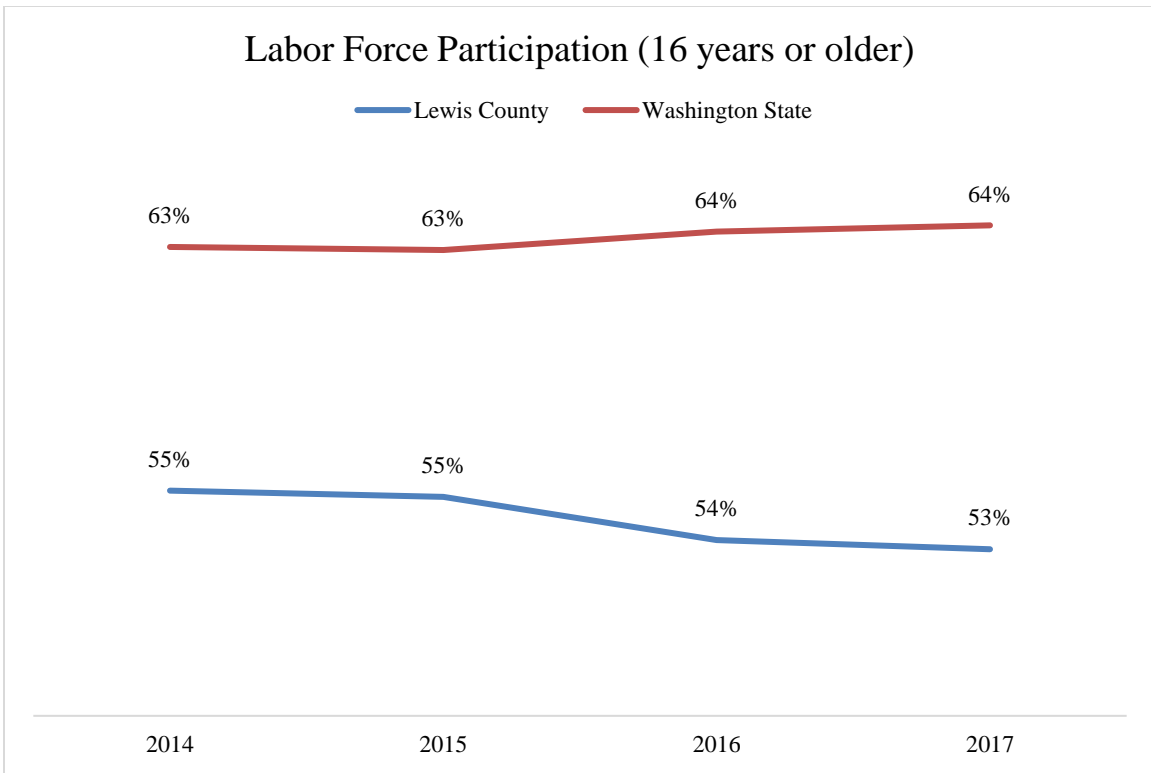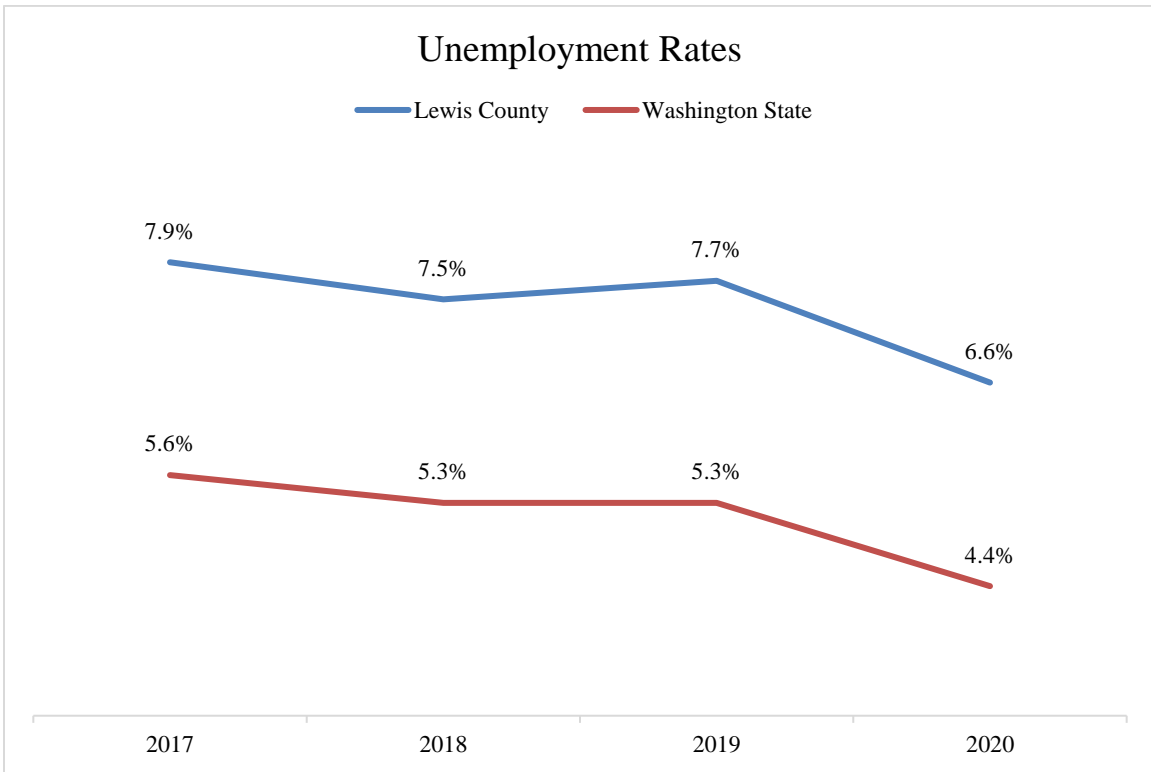| 2017 | 2018 | 2019 | 2020 |

Figure 3

In addition to construction and trades, the goods-producing sector employed 5,230 in 2018, up 11.3 percent from 2017. Manufacturing was up 13.3 percent and construction was up 5.4 percent from their 2017 totals. The service-providing sector gained over 260 jobs from 2017 to 2018. Government employment was also up by 130 jobs. The 2018 figures show the trade and government sectors as the two largest employers in the county, with education and health services a close third (https://www2.census.gov/)[3].

The Lewis County Economic Development Council (EDC) conducted an Economic Development Strategic Plan (EDSP), completed in 2017. The strategic planning process took place over the course of 9 months and included the input of more than 60 stakeholders in the county. The information that follows was taken directly from the EDSP to highlight the components that apply to CTE program improvement efforts being undertaken at W.F. West High School. As of March 2020, this is the most recent strategic plan completed by the EDC.

Labor and Industry Demand (Regional)

The EDSP identified key industry sectors that represent the best opportunities for growth in Lewis County[4]:

- Healthcare
- Agriculture and food
- Glass, plastics, and chemicals
- IT and telecommunications
- Wood products
- Logistics and distribution

Demand. Between 2011 and 2016, the demand for new workers in the region was driven by growth in a few industries, primarily healthcare; restaurants, bars, & hotels; manufacturing; and retail. Healthcare shows the greatest projected increase in employment in the next five years, followed by retail and manufacturing. The need for new middle-skill workers is growing over the next 10 years. Various first-line supervisors, production occupations, and healthcare occupations are expected to be among the list of high-demand, middle-skill occupation. Of the high-skill occupations,

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[3] Additional sources for this data include: (Source: Employment Security Department; Bureau of Labor Statistics; Bureau of Economic Analysis; U.S. Census Bureau; U.S. Census Bureau, American Community Survey)

[4] Information taken directly from the EDC's Strategic Plan

registered nurses were projected to have the most annual openings between 2016 and 2021.

Healthcare. The healthcare sector has seen strong growth in the past five years, with local trends largely mirroring national growth patterns. Solid gains are expected through 2020, with local growth rates slightly exceeding national rates. The top three occupations in terms of demand are registered nurses, nursing assistants, and medical assistants. Of these top three occupations, registered nurses make median hourly earnings of $33.88, which is above the median hourly earnings of $20.00 for the county. Of the occupations with a high number of estimated annual openings, registered nurses, office clerks, and nursing assistants rank the highest. In each of these 20 occupations, a greater number of residents are employed than there are jobs in the county, meaning that Lewis County residents employed in these occupations are leaving the county to work. Of these top occupations, which make up the healthcare industry, all but four do not require education or training past a high school diploma or GED.

Agriculture & Food. Employment growth in agriculture and food-related industries has realigned with national patterns in recent years, following declines early in the past decade. The sector's largest industry in the county is food manufacturing, with beverage manufacturing seeing significant growth in percentage terms. The top two in-demand occupations are crop and greenhouse farmworkers and laborers; and farmers, ranchers and other agriculture managers. Crop and greenhouse farmworkers & laborers is the largest occupation by share of employment by far, followed by farmers, ranchers, & other agricultural managers and farmworkers (animals). Of these top three occupations, none pay higher than $20.00, the median hourly earnings for the county. Laborers/freight, stock, & materials movers, maintenance & repair workers, and heavy & tractor-trailer trucks drivers have the highest estimated annual job openings. In most of these 20 occupations, a greater number of residents are employed than there are jobs in the county, meaning residents employed in another major industry sector also have to leave the county in order to work. For all the occupations listed, none require education past a high school diploma or GED.

Glass, Plastics, & Chemicals. Employment in the sector has increased significantly in recent years and is projected to continue to grow faster than US sector employment through 2020. The largest increases since 2011 are in plastics and rubber products manufacturing and nonmetallic mineral product manufacturing. The top three occupations in terms of estimated staffing needs are heavy and tractor-trailer truck drivers, chemical equipment workers, and team assemblers. Based on estimated annual job openings, general & operations managers, laborers/freight, stock & material movers,

and maintenance & repair workers have the largest number of positions available. Like the two sectors mentioned above, Lewis County residents employed in this sector are leaving the county for work. Only one occupation, general & operations managers, requires a college degree. Bookkeeping, accounting, & auditing clerks requires some college and heavy & tractor-trailer truck drivers requires a nondegree award or certificate. As such, there are only six occupations with correlating educational programs in the region. General & operations managers and first-line supervisors are the only occupations that require experience in a related occupation, although most occupations require some on-the-job training.

Wood Products. Wood product manufacturing and related activities are a major source of employment in the county and well above national averages for these industries. The sector has also seen modest levels of growth, with declines and sluggish growth in forestry activities being offset by growth in wood product manufacturing and related activities. The top three in-demand occupations are logging equipment operators, sawing machine workers, and woodworking machine operators. Half of the occupations pay wages higher than the median hourly earnings for Lewis County. Laborers/freight, stock, & material movers have the largest number of estimated annual openings, followed by secretaries/administrative assistants. Annual openings in this sector are driven mostly by replacement demand. For most Lewis County residents working in the wood products sector, there are fewer jobs than there are employed residents, resulting in a loss of net commuters. None of the top 20 occupations require education past a high school diploma or GED. Heavy & tractor-trailer truck drivers requires a nondegree award or certificate.

Additional Workforce Development Resources

In addition to the EDSP, researchers identified current resources that highlight projections and opportunities for growth across a broader region. Although some of these sources are not specific to Chehalis, they confirm and strengthen the recommendations made by the Lewis County EDC in 2017, while providing relevant, timely content to help W.F. West CTE leaders build capacity for their program moving forward.

In a 2019 article from South Sound Business, Matt Matayoshi, the executive director of the LEDC, shared several promising economic opportunities for the Chehalis-Centralia region. He noted partnerships with Moonshot, a business incubator and accelerator, and Centralia College, that are encouraging entrepreneurs to consider the region as a viable option for their start-up businesses. In addition, he referenced the expansion of already existing companies, including UNFI and The Truss Company, who will occupy a new

manufacturing facility being built at The Port of Centralia. Matayoshi also shared a list of the largest employers in the region, by number of employed, as of October 2019 (Table 3).

Table 3

Company	# of Employees*
Providence Hospital	800
Fred Meyer Distribution Center	400
Hampton Lumber Mills	296
Cardinal FG Co.	241
Hardel Mutual Plywood Corp.	225
TransAlta	200
National Frozen Foods Corp.	200
Sierra Pacific	172
Morton General Hospital	172

*As of October 2019; South Sound Business

State Employment Projections. Figure 4 shows the Washington State Employment Security Department's employment projections for the Pacific Mountain region, which includes Lewis County. The projections show the employment areas with the highest net employment changes. Education and Health Services jobs are projected to increase by 3400 jobs between 2017 and 2022 and 6400 total jobs between 2017-2027. Jobs in the sectors of Social Assistance and Professional and Business Services also project high growth into the future. Though these figures include the surrounding counties of Thurston, Mason, Grays Harbor, and Pacific, the demographics between each are similar enough to extrapolate the pattern of job growth in each of these categories until 2027.
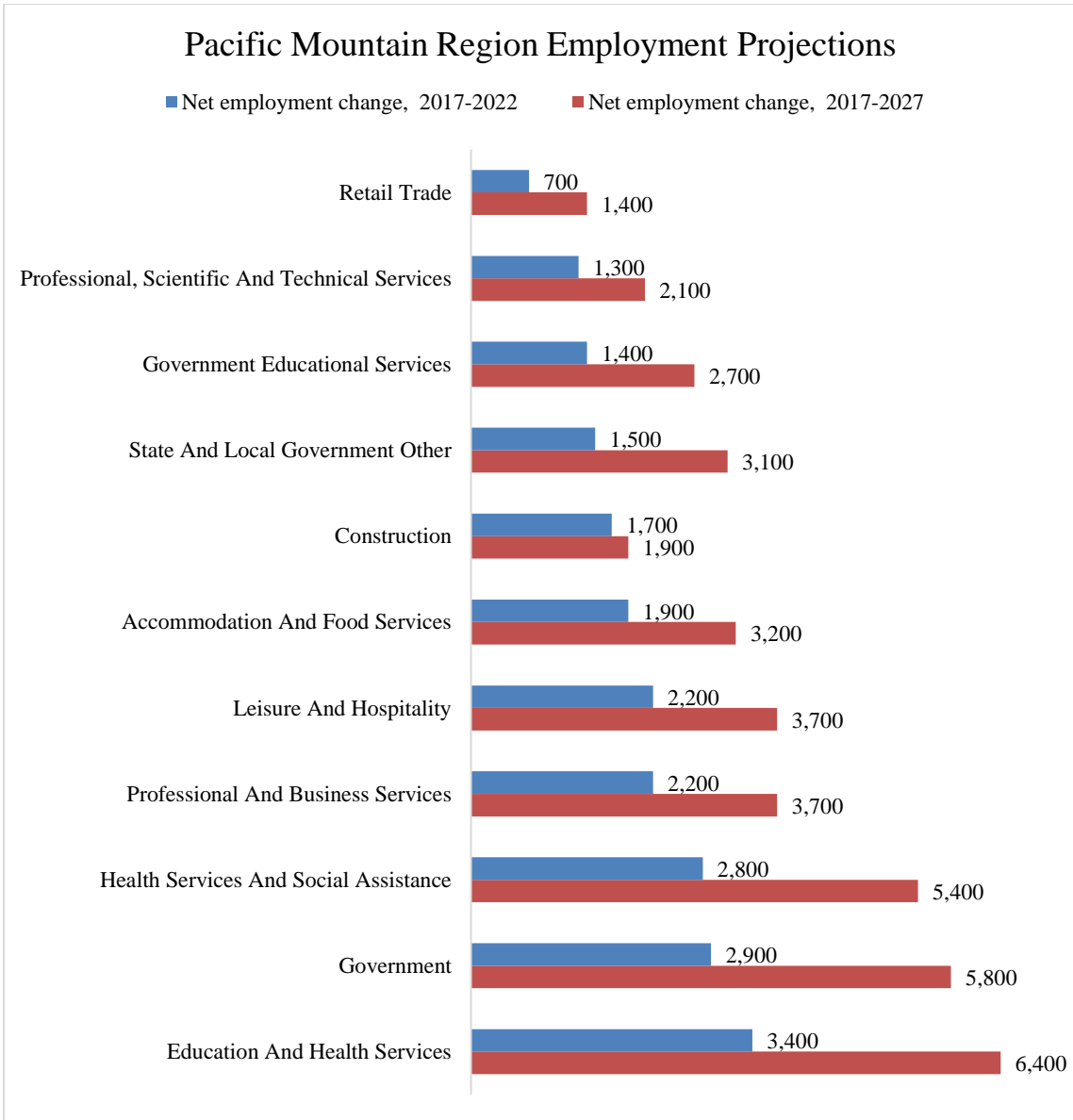
Pacific Mountain Region Employment Projections

Figure 4

Certificate and Apprenticeship Opportunities

Recent research from the Washington Student Achievement Council (WSAC, 2017) provides information on the projected job openings for students based on their educational attainment (Figure 5). The analysists suggested that there would be a 24% gap between available mid-level employees and the demand for these positions by 2025. The report highlighted several industries where the mid-level supply and demand gaps are projected to be the most noticeable throughout the state, including Service Occupations, Production and Trades, and Business, Management, and Sales (WSAC, 2017).

Total Projected Job Openings by Educational Level, 2020-2025

< I Year Postsecondary, 6.8%

High School Diploma or Less, 27.1%

> 1 Year Postsecondary, 17.2%

Associate Degree, 13.3%

Graduate or Professional Degree, 12.2%
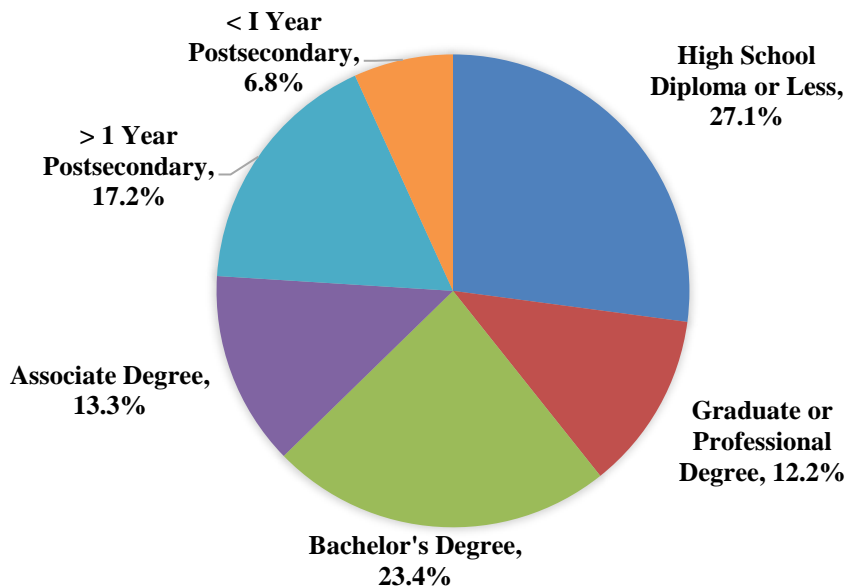
Bachelor's Degree, 23.4%

Figure 5. Source: WSAC Analysis of openings in 2017 Washington State Employment Security Department, Long-Term Employment Forecast and Education Levels based on analysis of the 2011-15 American Community Survey.

The WSAC report continues by explaining that the largest gaps between supply and demand will be seen in jobs such as computer support specialists, software programmers, life and physical sciences, culinary and hospitality occupations, business operations specialists, and healthcare workers, including medical technicians. These opportunities align with The Lewis County Workforce Development Council's earlier projections, although they apply more broadly to statewide need.

In an additional analysis of statewide opportunities, a review of the information provided by Labor & Industries (L&I) regarding available apprenticeship programs revealed over 60 such programs across Washington State. Table 4 provides a list of apprenticeship opportunities local to the Lewis Country region, while Appendix B contains a comprehensive list of all recognized Apprenticeship Committees and Programs. Within each committee, there may be several apprenticeship training opportunities.

Table 4

Apprenticeship Programs

Alta Forest Products+

Aries Mehcanical Inc. Apprenticeship Committee+

C&R Tractor & Landscaping, Inc. Apprenticeship Program+

Centralia City Light Apprenticeship Committee+

Frontier Apprenticeship & Training+

Glaziers, Architectural Metal and Glassworkers Apprenticeship Committee+

Grays Harbor P.U.D. No. 1 Apprenticeship Committee+

Great Rivers Behavioral Health Organization Apprenticeship+

Greater Western Washington Pipe Trades Apprenticeship Committee+

Hampton Lumber - Morton+

Lewis County P.U.D. Apprenticeship Committee+

Operating Engineers Regional Training Program JATC+

Pacific Northwest Ironworkers and Employers Local #86 Apprenticeship Committee+

Pierce County Meat Cutters Apprenticeship Committee+

Pierce County Roofers Apprenticeship Committee+

Town of Eatonville+

Tradesmen Apprenticeship & Comprehensive Training+

Western Washington Drywall Apprenticeship+

Western Washington Masonry Trades Apprenticeship Committee+

Western Washington Operating Engineers Facilities Custodial Services Apprenticeship
Committee+

Western Washington Painting Apprenticeship+

Western Washington Sheet Metal JATC+

Western Washington Stationary Engineers Apprenticeship Committee+

Chehalis School District CTE Audit

Quantitative Data Analysis

Researchers worked with school and district leaders to gather data on CTE course taking patterns and student outcomes. Understanding this data will help leaders to generate a baseline to build upon when considering opportunities for an updated CTE program across the district, in coordination with the literature review, workforce analysis, and qualitative analysis. Additionally, researchers provided a survey for students at W.F. West High School, asking them to share their understanding and perspectives of the CTE program. Survey results are included in this report to communicate the current climate regarding CTE throughout the district. Finally, researchers visited all CTE classrooms during the February 2020 STAR data collection, to determine the level of alignment with Powerful Teaching and Learning[5].

Figure 6 shows the number of students taking at least one CTE course between the 2016-17 and 2018-19 school years, by semester. This is a distinct count, with each student only represented once. Students took more CTE classes during the 2017-18 and 2018-19 school years than the 2016-17 school year.
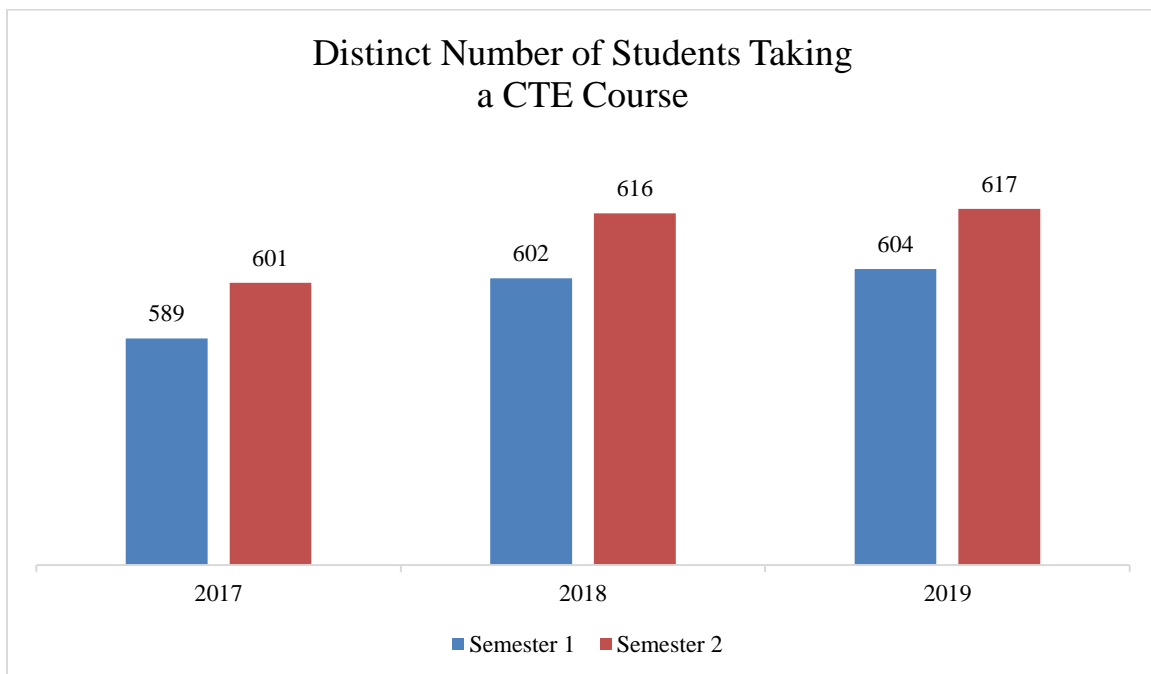

Figure 6

Figure 7 shows the total number of students taking a CTE course between the 2016-17 and 2018-19 school years by semester. This chart counts students who may be taking multiple CTE courses during the semester. In the three years of data provided there has been a steady rise in the number of students enrolled in CTE courses. Interestingly, more students take CTE courses in Spring semester.
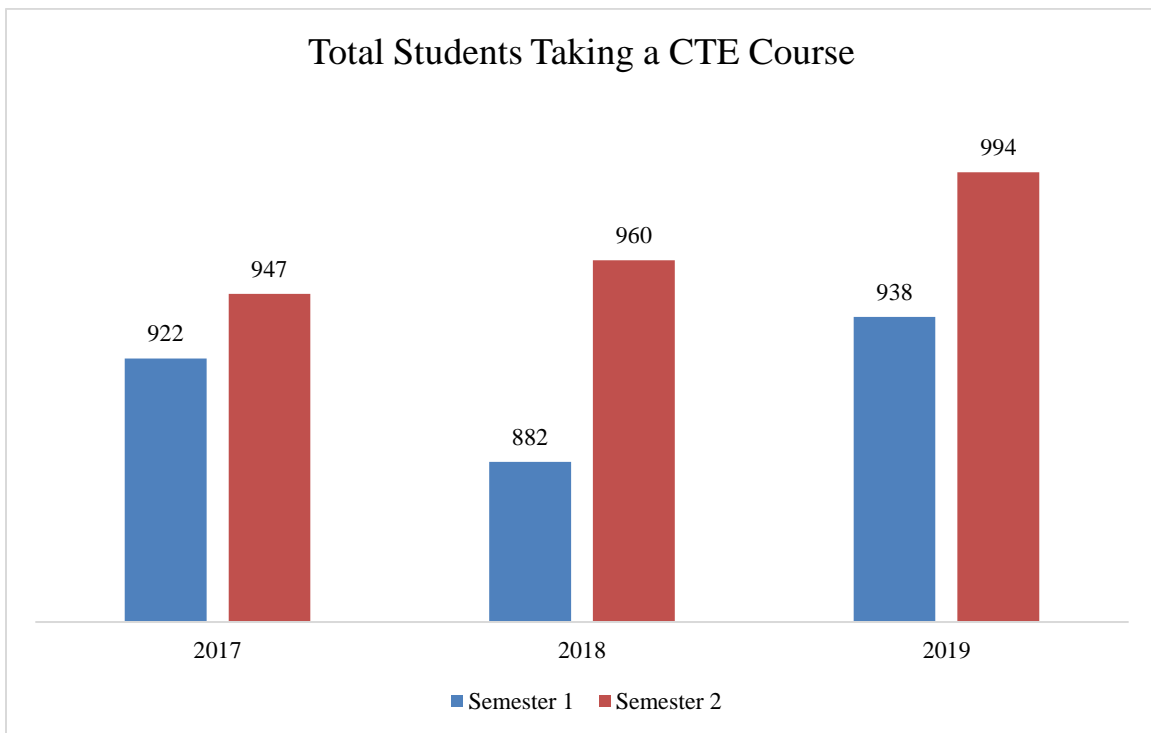

Figure 7

Researchers further disaggregated course taking by grade level. Figure 8 shows the percent represented by each class in CTE courses during the 2018-19 school year. Freshman students make up 30% of CTE students, while seniors only make up about 20% of CTE students.
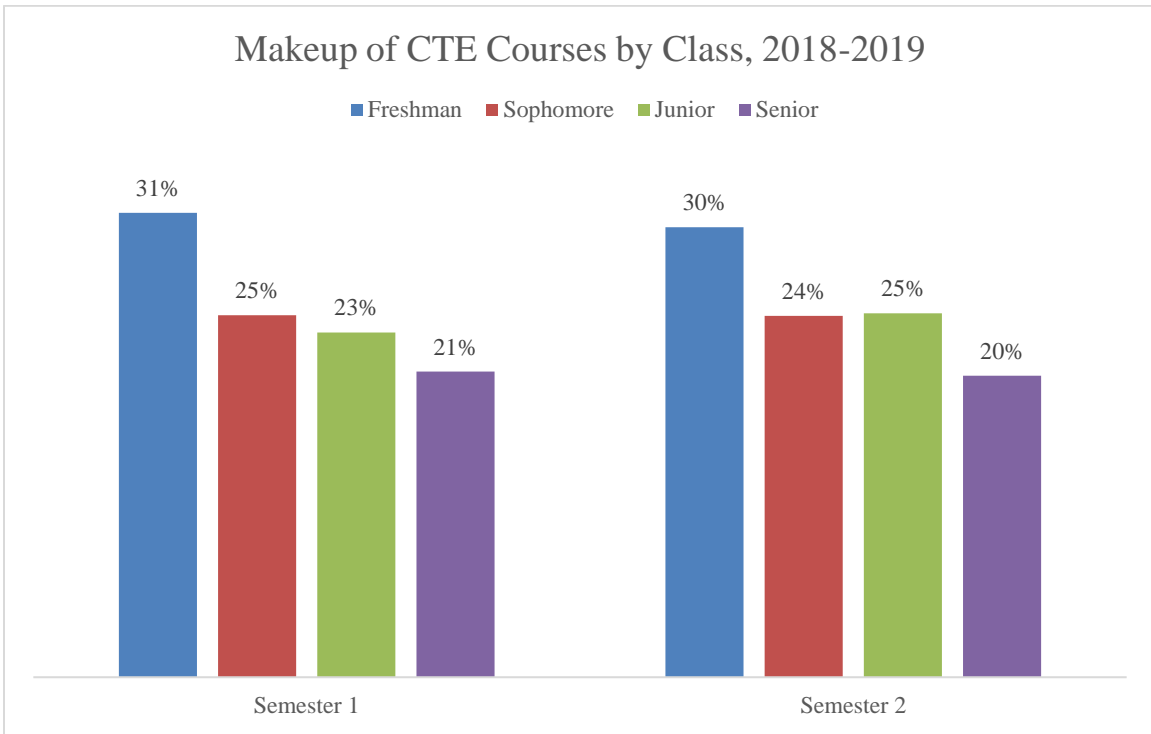
Figure 8

To quantitatively understand which classes were most popular with students, researchers analyzed all CTE courses during the 2018-19 school year by graduating class. Table 5 through Table 8 show the five most popular CTE courses by graduating class for each semester. Between both semesters, the most popular courses for freshman included Sign Making, Photography, Environmental Science, and Culinary Arts. Sophomores preferred to enroll in Biology, ASL, and Sign Making. The most popular classes for Juniors included ASL 2, ASL 1, Botany, and Animal Biology. The Senior class's most popular courses included Personal Finance, ASL 1, Biology, and Photography.

Table 5.

Most Popular Courses, Senior Class

Semester 1		Semester 2	
Course	Number of Students	Course	Number of Students
ASL 1A	41	Personal Finance B	48
Biology A	41	Biology B	38
Photography	36	Early Child Education	37
Sign Making	35	ASL 1B	36
Personal Finance A	33	Photography	30

Table 6

Most Popular Courses, Junior Class

Semester 1		Semester 2	
Course	Number of Students	Course	Number of Students
ASL 2A	22	Personal Finance B	24
Animal Biology A	17	ASL 2B	21
Botany Fall	16	Botany Spring	21
ASL 1A	15	Animal Biology B	16
Sign Making 1	13	ASL 1B	15

Table 7

Most Popular Courses, Sophomore Class

Semester 1		Semester 2	
Course	Number of Students	Course	Number of Students
Biology A	44	Biology B	39
ASL 1A	39	ASL 1B	35
Sign Making 1	22	Early Child Education	15
Screen Print	11	Photography	14
Graph Des. A	11	Sign Making 1	11

Table 8

Most Popular Courses, Freshman Class

Semester 1		Semester 2	
Course	Number of Students	Course	Number of Students
Sign Making 1	42	Env. Science B	35
Env. Science A	37	Sign Making 1	34
Culinary Arts	31	Photography	29
Photography	29	Graph Design B	29
ASL 1A	28	Culinary Arts	25

Researchers also analyzed the grades students were earning in CTE courses. Figure 9 shows the average grade point average for all CTE courses offered over the three years of data provided. CTE students' GPA's hovered around 3.0, a B average, over the last three years, with a deviation of about 0.15. This suggests that students generally perform well in CTE courses. Figure 10 disaggregates the 2018-19 school year GPA by class. Seniors earned the highest GPA in CTE courses, 3.09, while sophomores earned the lowest, 2.72.

Average Grade Point Average for CTE Courses

2.97 3.07 3.11 3.22 2.93 2.85

2017 2018 2019

■ Semester 1 ■ Semester 2

Figure 9

Average GPA of CTE Courses by Class, 2018-2019

2.82 2.72 2.95 3.09

GPA

■ Freshman ■ Sophomore ■ Junior ■ Senior
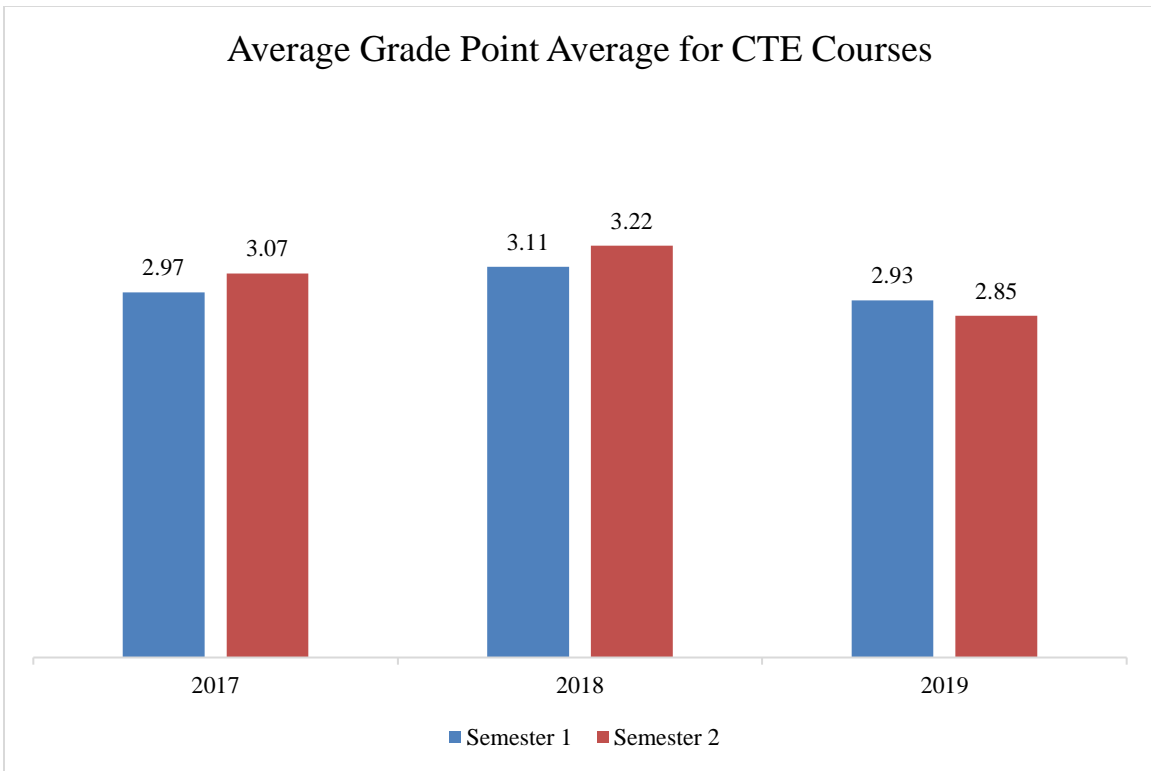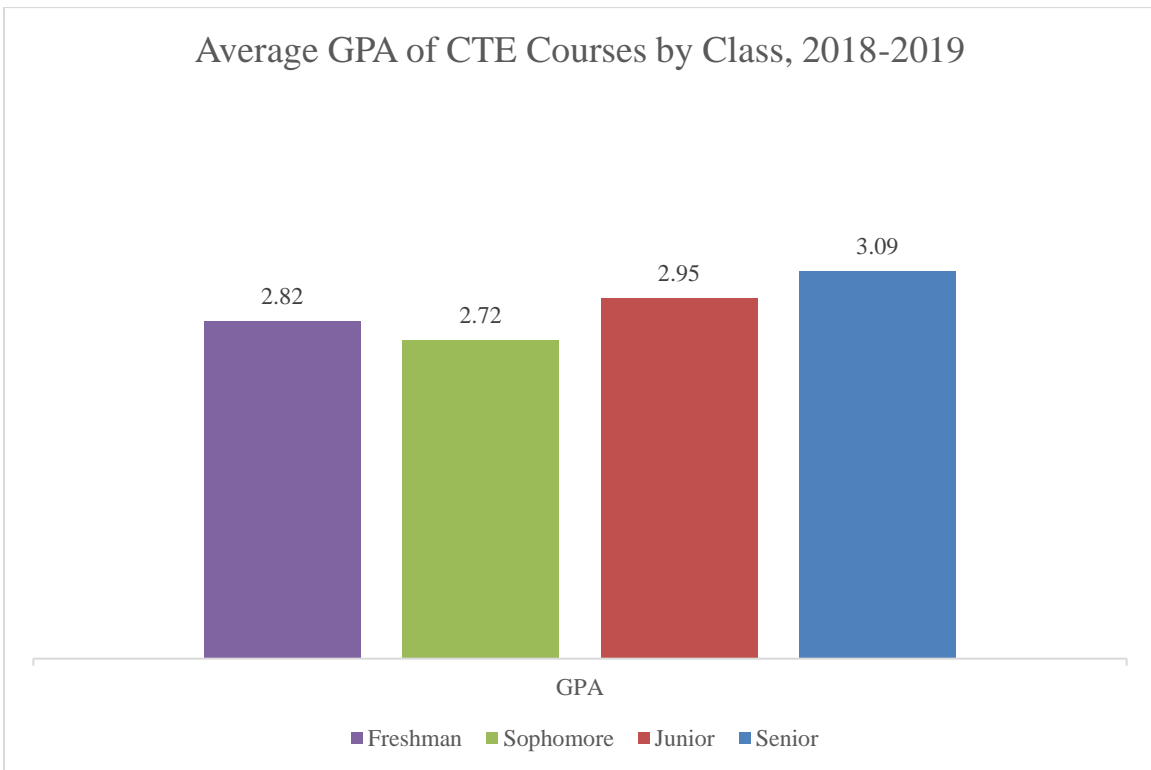
Figure 10

In addition to course taking patterns and grades, a list of CTE courses that have been approved for articulation between W.F. West High School and Centralia College (Table 9) has been included in this audit. Students taking and passing these courses can complete college credit while in high school, helping them to make progress on their career pathway and save money and time once they enroll in their postsecondary option.

Table 9

W.F. West High School	Centralia College	Credits	Program of Study
Welding A & B (180 Hours)	Weld 151	5	AAS Diesel Technology
Early Childhood, Educational Services (180 Hours)	ECED 170	3	AAS Transfer Early Childhood Education AAS Early childhood Education State Early childhood Education Certificate Initial State Certificate Early Childhood Education
Precision Machining Level 1 & 2 (180 hours)	DET 100 Shop Skills or DET 166 Shop Skills	5 3	AAS Diesel Technology AAS Welding Technology COP Welding
Auto A & B (180 Hours)	DET 100 Shop Skills or DET 166 Shop Skills	5 3	AAS Diesel Technology AAS Welding Technology COP Welding
Medical Terminology (90 Hours)	BTEC 260 or MA 139	4 5	AAS medical Assistant AAS Medical Assistant COP Phlebotomy

College Pathways

Researchers explored the Centralia College Course Catalogue to determine the postsecondary opportunities available to Chehalis students, and understand how those opportunities align with the CTE programming in the CSD. Although this will eventually be the work of the CTE committee at the district level, there were some examples of

opportunities to vertically align programming at the high school level with the college, to better prepare students for their college and career trajectory. Overall, Centralia College offers five content specific pathways, with multiple career options embedded into each (Table 10). The college also offers 4 bachelor's degree programs, including a Bachelor of Applied Science in Teacher Education, Applied Management, Diesel Tech, and Information Tech. Appendix C includes a complete list of certification programs offered at Centralia College.

Table 10

Academic Strand	Pathways
Arts & Sciences	Anthropology
	Biology
	Botany
	Chemistry
	Dramatic Arts
	English
	Environmental Sciences
	Fine Arts
	Foreign Languages
	Geology
	Graphic Design
	History
	Humanities
	Math
	Media Studies
	Music
	Natural Resources Management
	Physics
	Psychology
	Sociology
Business	Accounting
	Administrative Assistant
	Business
	Office Assistant
	Office Manager
Education & Social Services	Chemical Dependency Professional
	Criminal Justice
	Early Childhood Education
	Education

Healthcare & Life Sciences	Medical Administrative Assistant
	Medical Assistant
	Medical Scribe
	Nursing
	Nursing Assistant Certified
	Phlebotomy
	Physical Education
	Pre-Chiropractic
	Pre-Dental Hygiene
	Pre-Dentistry
	Pre-Medicine
	Pre-Nursing
	Pre-Pharmacy
	Pre-Physical Therapy
	Pre-Veterinary Medicine
Technology, Trades & Manufacturing	Diesel Technology
	Electronics, Robotics, & Automation
	Energy Technology
	Engineering
	Information Technology
	Mechatronics
	Welding

By understanding the pathway offerings at Centralia College, CTE faculty and leadership at W.F. West can begin to help students select CTE courses that will prepare them for college. For example, within Healthcare & Life Sciences, students can choose the 'Medical Assistant' Pathway. After reviewing the expectations for 2 years of study, and the recommendations for prerequisites, high school students might be guided to take CTE courses including CTE biology and Medical Terminology, in addition to Psychology and Technical Writing as electives. Additionally, understanding the pathways at the college may help guide CTE leaders as they build the capacity of their program within the district.

Student Perception Survey

Researchers asked students to complete a brief on-line survey to better understand the student perspective on CTE courses offered at W.F. West High School. During the week of February 2nd, 2020 students in all grades were provided an e-mail link, and asked to complete the survey during their Career and College Readiness learning block. Four hundred and twenty four students completed the survey, representing approximately 50% of the total student population at W.F. West. Total responses disaggregated by grade band show that 9th graders had the highest response rate, and 11th grade the lowest (Table 11).

Table 11

Grade Level	# of Respondents	% of Total Responses
9th Grade	149	35.1%
10th Grade	119	28.0%
11th Grade	77	18.1%
12th Grade	79	18.6%

Of the students that completed the survey, 53.1% reported that they had taken at least one CTE course (Figure 11). The demographic distribution of students who had not taken CTE courses was not significantly different from those who had. A slightly greater number of female students responded to the survey (52.5%), and the two predominate ethnicities represented were Caucasian (82%) and Latino/Latina (8.5%).
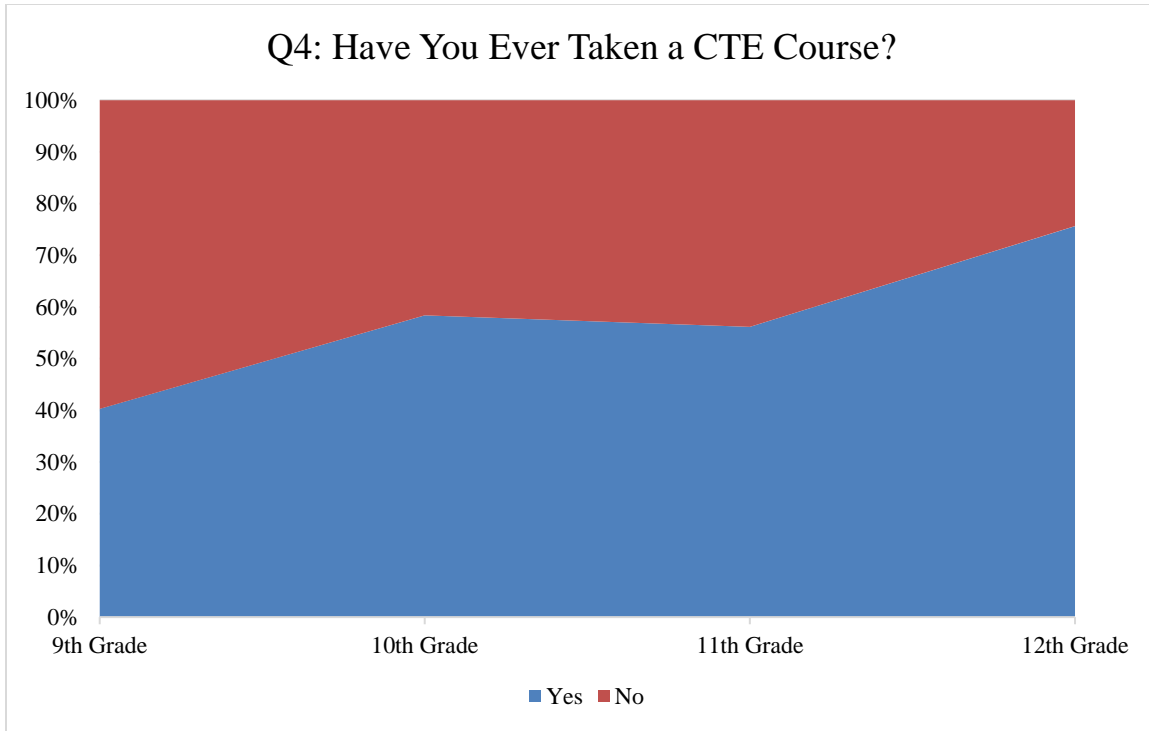
Figure 11

When asked to share what specific CTE courses students had taken, or in which they were currently enrolled, over 30 course names were selected. The 11 most frequently selected courses are included in Figure 12. Photography and Sign Making were the most popular CTE courses with survey participants, making up more than 25% of the total responses. Students were also asked to provide input on how they learned about CTE courses at their school. Responses disaggregated by grade level show that school counselors and teachers appear to be the most common sources of information for all grade levels, with 'friend' the third most frequently selected (Figure 13).

Number of Students Who have taken Specific CTE Courses

Course Title	Number of Students
Photography	65
Sign Making	61
Graphic Design	48
Sports Medicine	41
Culinary Arts	32
Screen Printing	31
Early Childhood Education	28
Applied Botany	26
Welding or Metal Art	25
Art	23
Personal Finance	22

Figure 12

Q6: In What Ways Have You Learned About CTE Courses?

Legend: School Counselor, Teacher, Parent/ Guardian, Sibling, Friend, Principal, Community Member, Guest Speaker

Figure 13

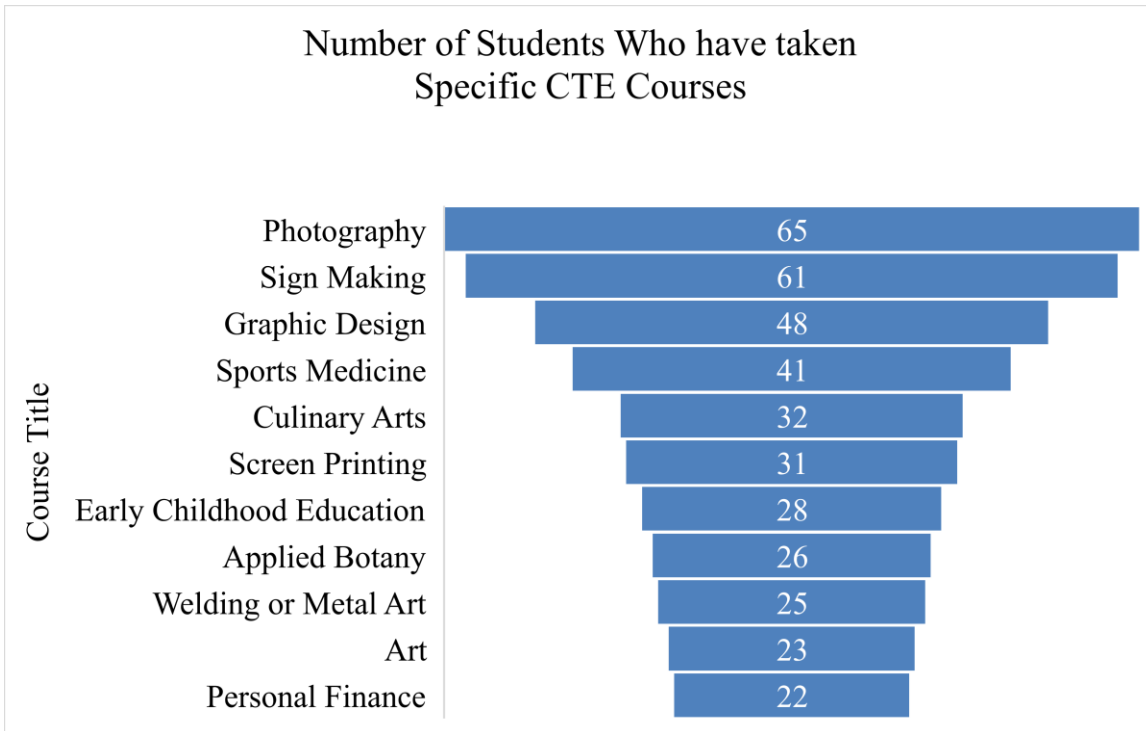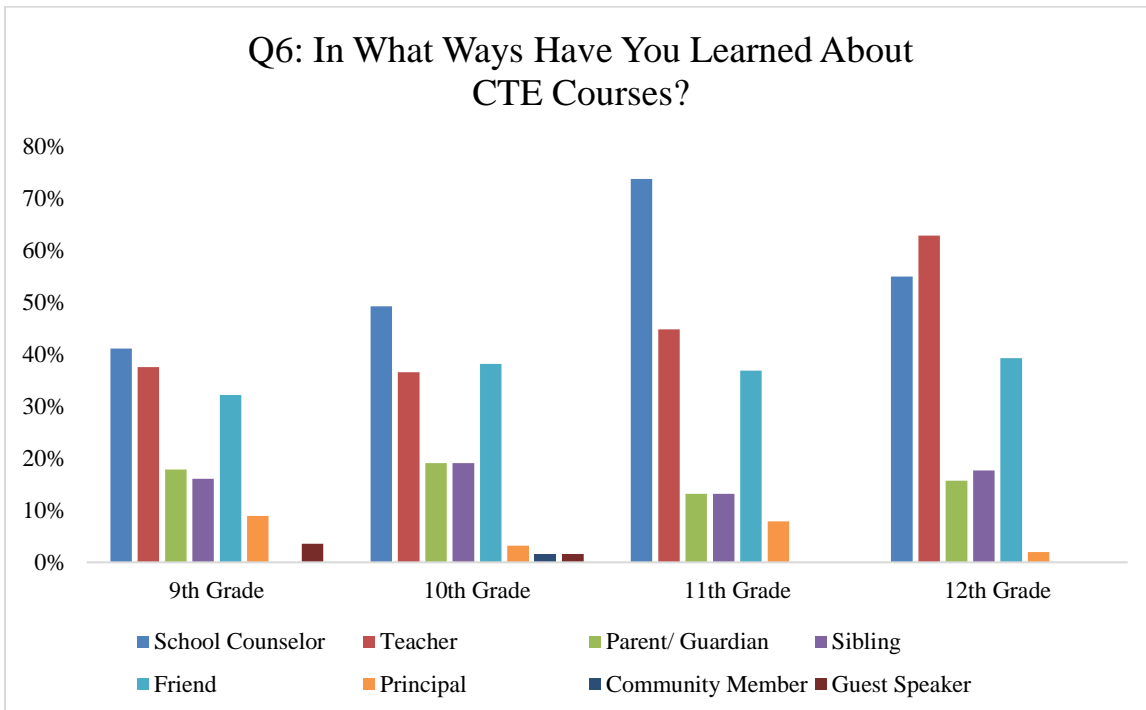Survey item 7 asked students to share their post-secondary plans. This data, disaggregated by grade level, shows that for each class, the majority of W.F. West students plan to enroll in a 4-year college (Figure 14). Twelfth grade students selected 2-year college as their second most likely plan, followed by work and trade school. At the 10th and 11th grade levels, a greater percentage of students responded that they were planning to go to 4-year college, with a much smaller number planning to attend 2-year schools or trade schools. Predictably, the percentage of students who responded 'not sure' when asked decreased steadily by grade level, with only about 6% of students reporting they were still unclear into their 12th grade year.
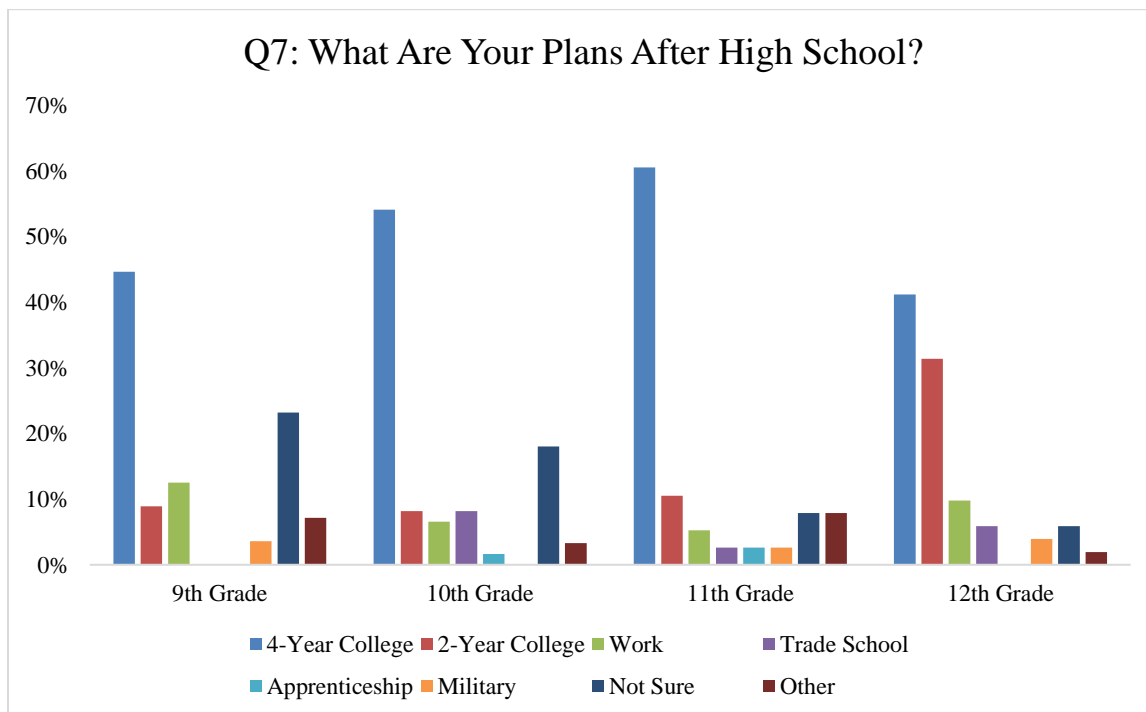
Figure 14

One evidence-based measure of student engagement and success is the relationship a student forms with their teacher. The survey asked students to share whether they felt their CTE teachers had helped to guide them towards a career pathway. This is an important component of any CTE program, as students who have a clear pathway are more likely to persist and complete their post-secondary plan, ultimately leading to higher wages and more opportunity for professional growth (Figure 15). For each grade band, more than half of the student respondents agreed that their CTE teacher helped to guide them towards a career pathway, with 10th grade students having the highest agreement rate of 62.9%.
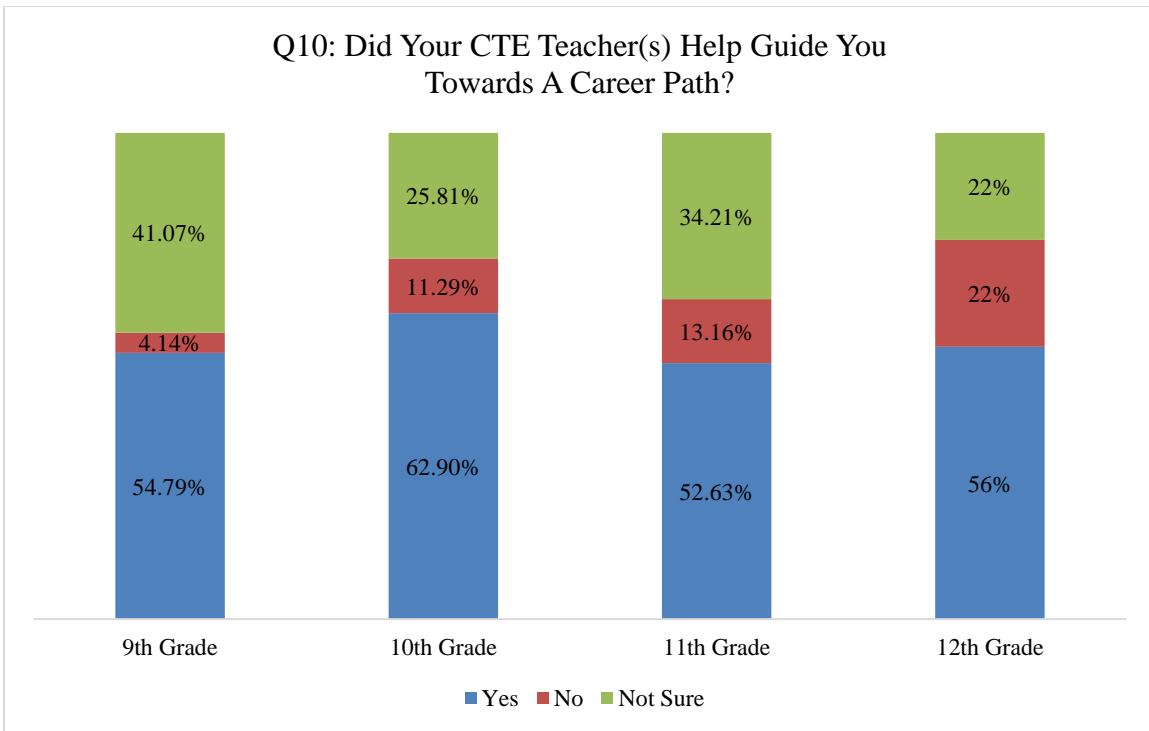
Figure 15

Overall, these survey responses provide several important understandings: About 40% of the students that responded are not clear on exactly what CTE courses are; about half of all student respondents did not feel their CTE teacher helped to guide them towards a career pathway; and, of the courses most often taken by these students, there appear to be some gaps between the needs of the workforce in Lewis County and the CTE courses students are choosing.

CTE Instructional Rigor: STAR Data Collection

During the Winter 2020 STAR data collection, researchers visited each CTE classroom to determine alignment with the Four Habits of Powerful Teaching and Learning (PTL). These habits include: *Concepts & Processes, Question & Discussion, Purpose & Expectations, and Environment & Differentiation*. The CSD has been collecting this data since 2012 and uses results to help school improvement efforts and maintain a focus on instruction for all students. Results from the 2020 data collection, disaggregated by department, revealed that overall, 82% of CTE classrooms were aligned with PTL (Figure 16).

How well was this lesson aligned with Powerful Teaching and Learning? Winter 2020
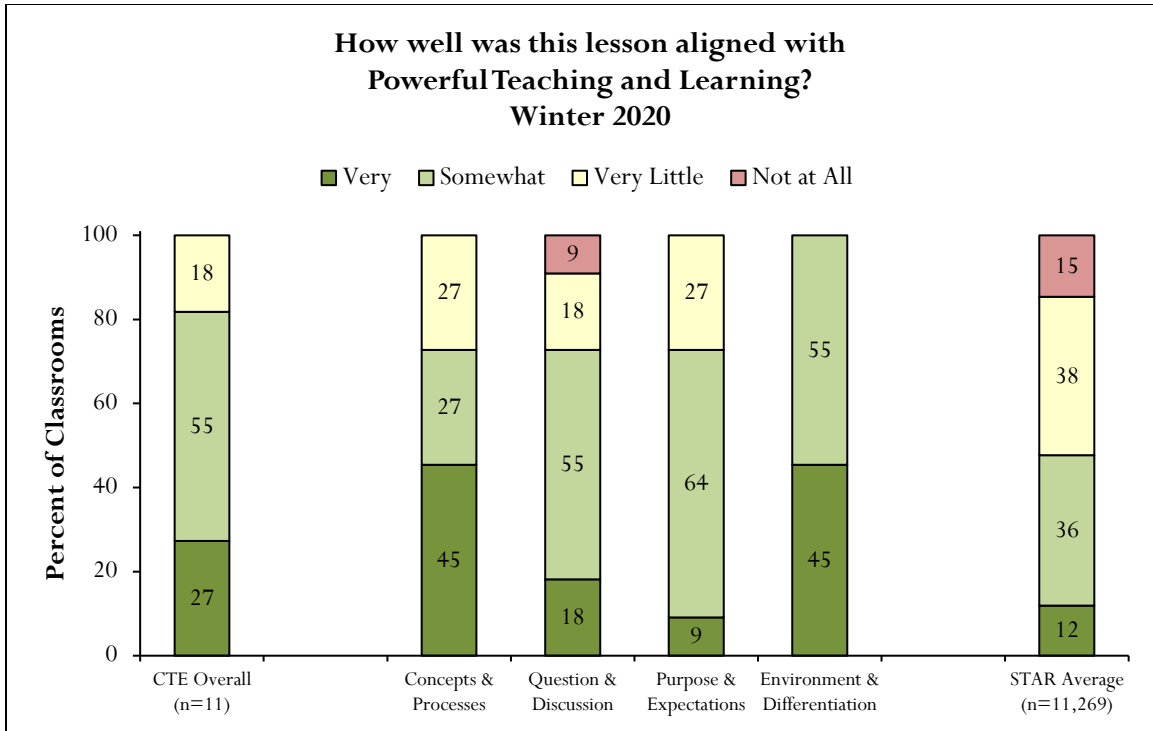
Figure 16

Environment & Differentiation was the highest scoring essential habit on the STAR protocol, with 100% alignment to PTL. Classrooms were warm, welcoming, and set up for learning, with differentiated options and student voice and collaboration present. Researchers observed alignment with all other habits in about 73% of classrooms. Only one classroom did not show evidence of alignment with *Question & Discussion*. These scores suggest that CTE classrooms are engaging, interactive and purpose driven, with instruction that considers the diverse needs of students.

Qualitative Data Analysis

While the quantitative analysis provides an understanding of the CTE courses offered and taken at W.F. West High School, researchers gathered qualitative data to better understand the CTE program from the perspective of critical stakeholder groups, including teachers, students, administrators, and community and college leaders. These focus groups were held at W.F. West High School and Centralia College in January 2020, using a semi-structured interview protocol to guide questioning while allowing for participants to share authentically. Researchers coded all focus group notes, looking for themes identified throughout multiple stakeholder groups. Ultimately, four themes emerged from the data: engagement, partnerships, awareness, and physical and human resources. These themes, in conjunction with the quantitative information, will help to facilitate the development of a more comprehensive CTE program in the CSD.

Awareness

During focus groups and interviews, researchers asked participants to share the ways that they communicated about CTE courses with students and families. In the student survey, approximately 40% of students that responded noted they were not completely clear on what CTE courses actually are. Staff shared several different methods of reaching out to students, including presenting video slideshows, providing booklets about the courses offered during registration, displaying posters, and encouraging conversations with counselors. A few staff members noted that the videos were made several years back, and they did not remember making a big effort to show the videos in recent years. One staff member also shared that they used Instagram as a way to communicate the things they were doing in their CTE course.

When counselors were asked about their participation in spreading awareness about CTE courses, they discussed ongoing efforts undertaken throughout the year, including visiting classrooms and presenting the curriculum guides, using the NAVIANCE career inventories, focusing on the High School and Beyond Plan, reminding students of graduation requirements regarding CTE credits, and engaging in meaningful conversations with students about their interests. One counselor shared,

> [We hold] career panels with people coming in to talk about careers. At the beginning of the year [we] ask juniors and seniors what careers they are interested in, and use that data to color the rest of the year. We incorporate career highlights using those jobs, and get people matching them to come in and talk to the students, sometimes during CCR time. [Those are] open to whoever wants to come, 9-12.

Some examples of guest presenters included a police officer, a pilot, a nutritionist, electrical workers, and sheet metal workers. One counselor noted that almost 300 students participated in an apprenticeship panel to talk about what work is like, how to get started, and ask questions. In addition to bringing professionals to campus, counselors also planned career fairs at the middle and high schools, and organized college tours at local career and tech schools.

When students were asked what they knew about CTE courses at W.F. West, there were varied responses. Some students were honest, sharing that they didn't really know what CTE courses were, while others made the connection to workforce opportunities, noting that CTE courses help you to "get ready for a job when you become and adult," and often include "hands-on experiences" and something "you can apply in the field".

Engagement
Focus group participants were eager to discuss CTE programming at W.F. West High School. Over the past several years, career focus has become a priority as one component of the Student Achievement Initiative (SAI), a district-wide effort to increase career and college readiness for all students. Several focus group participants discussed the need for a strengthened CTE program aligned with the current jobs available in the area, although many acknowledged that they were not 100% clear on what those needs really are. Although one of the three prongs of the SAI was to 'Modernize,' stakeholders shared that some of the processes and participants were not necessarily keeping pace with contemporary issues impacting the local workforce and economy. One focus group participant shared, "They have some courses that are interesting or fun for students, but sometimes the courses are not able to articulate with the college." Another focus group participant noted that there are several community members on the advisory board that are retired, which causes some discrepancies regarding understanding current industry trends.

When asked about how CTE courses are determined, one focus group participant shared,

> [I have] no idea, but I would assume it is based on what we, as teachers, have to offer via which v-codes we can teach. Many of us, myself included, have businesses outside of school…I was able to switch to CTE by taking the business route. Many of our teachers have come straight from industry so they are limited to teaching in that area. So, the courses we offer are limited to what teachers are approved to teach.

While all stakeholders acknowledged the importance of building a comprehensive CTE program aligned with the current needs of the community, several acknowledged there were barriers to engaging in this process.

Partnerships

Focus group participants recognized the need to establish a strong partnership with Centralia College (CC), and local business and industry. Data has shown that about 40% of W.F. West graduates enroll in CC, making it a priority regarding the goal to increase college enrollment and persistence. As part of the High School and Beyond Plan, and Guided Pathway work being implemented at the college, students are encouraged to choose courses that will lead to a career. For this process to be successful, students and staff must have a clear understanding of what the college offers and what requirements students must meet in order to be on the right path. Communication with college leaders is essential to making this an efficient and effective process. One staff member shared an example of an experience building partnerships with a college:

> I had the opportunity to travel to Pueblo College with my W.F. West colleagues and staff members from Centralia College. This was set up by Dr. Pope and the Chehalis Foundation and I found it very beneficial. The partnerships that Pueblo and their local high schools had was something that we could definitely implement at W.F. West. Our anatomy table and some of our welding programs benefited from this, but this needs to be revisited for all our programs. There is more to be gained from our Graphic Arts classes.

Another opportunity for partnerships regarding CTE is the Advisory Board, which meets yearly, and included representatives from the school district and local businesses. W.F. West staff shared varying perspectives on the value and purpose of this meeting. Several noted that it did not feel reciprocal, or that information was shared, but there didn't seem to be a plan for continued collaboration and communication. One teacher noted that they felt few people were really invested in the meetings. Despite this, staff were overwhelmingly in support of building more meaningful partnerships with the college and local businesses, but cited time and capacity as barriers to accomplishing this goal.

District administrators suggested that having advisory meetings more regularly would help to build relationships and develop more purpose. They also suggested inviting representatives from Centralia College to join the committee. One administrator noted the importance of, "…having intentional meetings to discuss bridging the gaps that exist when students leave the high school and enter college." Counselors also felt that communication and collaboration with CC faculty would benefit students, and help to get them excited about opportunities that might exist.

Researchers also met with industry leaders to discuss their perspectives on building partnerships with k-12 and postsecondary educational settings. During discussions, these leaders shared their beliefs about the importance of building relationships, but also noted that in order for them to make an invested commitment, the meetings would need to be

efficient and effective, with representatives that understand the current workforce demands. This stakeholder group also commented on the importance of honoring the time of meetings, and making genuine efforts to listen and incorporate the ideas of all committee members, rather than the voices of just one or two.

Physical Resources
One consistent theme identified during focus groups was the perceived lack of equipment and space needed to adequately support CTE programming. CTE staff spoke to challenges regarding timely maintenance, outdated equipment, and structural issues with classrooms, noting that they felt some students were reluctant to take classes because of the stigma of going into the "old building". Several people made direct comparisons to the newer, more modern STEM wing, one commenting that when the STEM wing needs something, it happens immediately. Another staff member shared a similar perspective: "Facilities are the biggest deficit. But the STEM wing is pristine and great and the CTE area is a ghetto. We have terrible water leaks, especially when it rains. There is definitely a difference between the core and ag building."

In addition to the perception of an outdated, poorly maintained learning space, staff focus group participants shared that they weren't confident that the administration knew what was going on in their classrooms. Often requests were made but not responded to quickly, leaving staff feeling frustrated or unheard. One teacher was able to summarize the general concerns of the CTE staff:

> Our CTE Building is in desperate need of new or remodeled facilities. Our CTE program offers some of the most unique and beneficial classes for students in Washington State. We need facilities that can allow our programs to expand and better fit the needs and skills our students will need within industry…

Another staff member contributed to this idea, sharing that more relevant courses could be offered if CTE facilities were modernized. They listed several options, including EMT training with ambulances, nursing and medical field training, firefighting, law enforcement, personal training certification, and construction management.

Summary

Overall, researchers identified four critical areas for program leaders to consider when developing a more robust CTE program at W.F. West High School: Awareness, Engagement, Partnerships, and Physical and Human Resources. Stakeholders from the district, college, and community were enthusiastic about this audit, and willing to share their perspectives in an effort to create a program that would meet the changing needs of the students, and support the economic growth and development of the region. District and College leaders had rich conversations about the potential for CTE courses to connect to college pathways, particularly at Centralia College. These efforts continue to support the Student Achievement Initiative by maintaining a commitment to providing high quality, rigorous, and intentional instruction for all students throughout the district, while also honoring the diversity of interests and opportunities in the community.

An analysis of the Lewis County EDC's workforce projections, as well as data from the U.S. Census and The Bureau of Labor Statistics, revealed that several industry areas are expected to experience growth over the next ten years, including healthcare (nursing specifically), agriculture and food, manufacturing, and IT. Developing pathway plans for students that focus on these areas will likely help to increase engagement in high school CTE courses, and provide more opportunities for postsecondary completion and degree/certificate attainment in a viable career option.

Quantitative, descriptive data revealed CTE course taking patterns that can be used to inform future decision making by aligning the workforce needs with the opportunities made available to students. Students selected Sign Making, Graphic Design, Photography, Botany, and American Sign Language most frequently, although preferences seemed to vary by grade band. Many of the most frequently selected CTE courses also fulfill additional graduation requirements, including Fine Arts and Foreign Language. As program leaders define the vision and goals of their CTE program, it will be important to consider the course options that best align with workforce needs as well as the interests of the students when building the CTE catalogue.

The CSD remains committed to supporting all students as they complete their K-12 education and move towards a postsecondary option. Recommendations, based on the research and data collected through this evaluation process, are included to support the school district as they develop a new CTE improvement plan. Additionally, researchers have included a recommended sequential action plan for CTE leadership to consider as they develop their 5-year plan.

Recommendations

As a result of the fifth reauthorization of the federal Carl. D. Perkins Career and Professional Education Act (Perkins V), schools across the nation are preparing students for careers and college through increasing the rigor in their CTE courses and expanding opportunities for students to learn practical skills through hands on training in the workplace. The new legislation emphasizes workplace-based learning, post-secondary training, industry credentials, access for students from special populations, and programs that prepare students for careers in science, technology, engineering, and math (STEM). Another focus of Perkins V is for CTE programs to better align their courses with careers that yield a living wage job, as well as provide the rigor necessary to give students the opportunity to pursue post-secondary training of their choice, to include but not limited to apprenticeship programs, technical college or four-year college (Heyward, 2019).

After conducting various focus groups, reviewing the literature around best practice in CTE, analyzing regional reports, and studying the goals of the new legislation around CTE, it is recommended that administration, faculty, and staff at W.F. West High School, along with stakeholders from post-secondary education and local labor and industry, develop a CTE improvement plan around the following areas:

- **Awareness.** Promote better awareness of the CTE courses offered at W.F. West High School and how they correspond with living wage career opportunities in Lewis County.

- **Engagement.** Increase the breadth and level of employer engagement to better align CTE programs and courses with skill development relevant to living-wage jobs in the region.

- **Partnership.** Collaborate with regional workforce organizations and educational institutions to increase the number of pathways from high school to college and strengthen the qualified employee pipeline.

- **Physical and human resources.** Invest in physical resources that enhance learning, including modern facilities and state-of-the-art equipment, as well as maximize the use of human resources to effectively meet the goals of the CTE program.

Awareness

Promote better awareness of the CTE courses offered at W.F. West High School and how they correspond with living wage career opportunities in Lewis County.

A performance audit by the Office of the Washington State Auditor, called Leading Practices for the State's Secondary Career and Technical Education Programs (2017), reported that "business groups, OSPI officials, and educators report that schools need to do a better job of promoting CTE and apprenticeships, and the careers that are available in various industries. State legislators have also concluded there is a lack of awareness about CTE opportunities" (p. 18), noting:

"The legislature further finds that teachers, counselors, students, and parents are not well-informed about the opportunities presented by high quality career and technical education." (RCW 28A.700.005 (3))

Further emphasizing the importance of CTE awareness, the report adds "While recent legislation requires an inventory of each student's career interests and skills in the 7th or 8th grade, more could be done to address this lack of awareness. According to educational research, a major reason that students drop out of high school is they cannot see the connection between their high school courses and a job. Helping students explore the many career options that are available to them in a comprehensive way in the 7th or 8th grade is a recommended practice incorporated in career-focused educational models to address this problem" (p. 3).

To improve awareness of career pathways and living wage career opportunities, it is recommended that CTE stakeholders:

- Develop protocols to ensure teachers, guidance counselors, students and parents are aware of the various post-secondary training programs relevant to Lewis County's high demand, living wage career opportunities. This information should highlight career and technical education, apprenticeships, along with degree and certificate bearing postsecondary programs.

- Improve career awareness programs throughout the K-12 system, with an emphasis of career exploration at the middle school.

- Provide opportunities for students to participate in regional job fairs to expand awareness and to begin building relationships with employers.

- Provide opportunities for students to engage in real world, hands on training and career exploration during the summer, through internship, apprenticeship, and/or mentorship programs.

Engagement

Increase the level of employer engagement on CTE Advisory Committees to better align CTE programs and courses with skill development relevant to living-wage careers in the region.

A comprehensive study prepared for the Lewis County Economic Development Council, the Workforce Development Training Needs Gap Analysis (2017), acknowledged that "the mechanisms for engaging employers in workforce systems are frequently fragmented. Many different organizations and educational institutions seek the participation of employers in an uncoordinated manner" (p. 13). This was consistent with information that was gathered through focus group interviews where CTE staff, administration, and industry leaders stated that the CTE advisory committee and the committee meetings were not as effective as they could be.

A report from the Washington State Auditor's Office explained that "Businesses report difficulty finding job candidates with the technical skills they need. More coordinated outreach through CTE advisory committees would strengthen school districts' ability to incorporate the skills employers need into coursework. The CTE courses schools currently offer do not always reflect the skills and trades most in demand." (Leading Practices for the State's Secondary Career and Technical Education Programs, 2017, p.3)

To improve employer engagement, it is recommended that CTE stakeholders:

- Audit current CTE courses and carefully study potential CTE programs, to ensure relevancy and alignment to high demand, living wage careers.

- Ensure the advisory committee is comprised of a group of diverse representatives who have a strong understanding of the specific skills and knowledge needed in the current regional labor and industry market.

- Utilize advisory committee to brainstorm and create future CTE courses that align with the current labor and industry demand.

- Work collaboratively with representatives from Centralia College to develop sequential course offerings that provide clear pathways to employment.

- Take administrators and teachers on tours of local businesses to get a first-hand look at what students need to know and be able to do.

- Develop specific agendas for each advisory committee meeting with objectives, assignments, and a system to monitor progress toward the goals of the CTE program.

Partnership

Join forces with post-secondary educational institutions and regional workforce agencies to increase the number of pathways from high school to college to improve the qualified employee pool.

CTE staff at W.F. West High School shared that many of their CTE programs have informal relationships with businesses. Some programs provide services for the community and local businesses, but there were few opportunities for students to get hands-on or on-the-job training in the workplace.

A recent report sponsored by the Center for Reinventing Public Education about rethinking Career and Technical Education reported that "New CTE challenges the notion that education must happen within school walls by pushing the boundaries between schools and the community. These programs collaborate with employers, universities, trade unions, city agencies, and others to design learning experiences that result in industry-recognized skills. They also leverage community assets and resources to launch and sustain learning experiences" (Heyward, 2019, p.4)

To increase the number of partnerships with local businesses and to expand career pathways, it is recommended that CTE stakeholders:

- Wherever possible, provide internships and other work-based learning opportunities for students. (*Employers and industry leaders, in focus group interviews, noted that for high school aged students, these types of work-based learning partnerships might be more feasible outside of the workplace due to liability concerns. It was suggested that business and*

industry personnel conduct real world simulations in a mobile lab or classroom setting).

- Promote the integration of soft skills and basic employability skills valued by regional employers into all CTE curricula.

- Work closely with college staff on the advisory committee to expand the number of CTE dual-credit opportunities to increase the number of pathways from high school to college**.**

Physical and Human Resources
Invest in physical resources that enhance learning, to include modern facilities and state-of-the-art equipment, as well as maximize the use of human resources to effectively meet the goals of the CTE program.

One major challenge facing CTE programs across the nation is the stigma it carries. Due to the history of vocational education, CTE programs are still viewed by some as courses designed for tracking low-income students not bound for college. Another challenge schools often encounter is inadequate staffing. Successful CTE programs require staff with dedicated time and availability to seek, build, and maintain relationships with the local business community.

Focus groups and interviews with students, CTE staff, and industry leaders showed that current facilities, along with antiquated tools and technology associated with the CTE programs, perpetuate this stigma and discourage some students from enrolling in CTE courses. Staff and administration also reported that due to the various duties and responsibilities of current CTE staff and administration, it was difficult to nurture and maintain necessary relationships with the business community.

To encourage more participation and have the capacity to establish relationships with the business community, it is recommended that CTE stakeholders:

- Secure and allocate funding to improve CTE facilities

- Re-brand the CTE programs as integral components of the school's STEM initiative

- Ensure the CTE facilities receive the maintenance support needed to keep facilities safe and in good repair

- Ensure the CTE programs have up to date and industry grade technology, tools, and resources

- Allocate time for the CTE director or another employer liaison to actively pursue, nurture, and maintain relationships with the business community

- Advertise CTE college credit bearing courses in the course catalog as prominently as other college in the high school opportunities

- Provide CTE staff with quality, job-embedded professional development

Proposed Strategic Plan

The following is a sample sequence of priorities based on the recommendations included within the current audit. This sequence is designed to provide guidance for a local team of stakeholders to make specific plans aligned with research, local need, capacity, and vision.

- **Identify and Support a Dedicated Liaison/Coordinator**

  It is essential to have a dedicated person(s) to have the time and the resources to regularly meet with and build relationships with community members, business leaders, representatives from regional colleges, and labor organizations. Other critical duties include coordinating advisory committee meetings, seeking out relevant professional development opportunities for CTE staff, providing leadership in career pathway development, staying abreast of local labor market demands, and continually evaluating the effectiveness and relevance of CTE programs. In some small districts this is the CTE Director, in other districts this person works collaboratively with the CTE director, and in some larger districts these responsibilities are carried out by a committee of people.

- **Develop a Comprehensive Advisory Committee**

  It is recommended by the Washington Office of the Superintendent of Public Instruction (OSPI) that the CTE Advisory Committee be comprised of members who represent business and industry, education, labor organizations, special populations, community, government, students, parents, and teachers. The key to an effective advisory committee is that a majority of the members share a working knowledge of the job tasks and competencies required for current occupations, related labor market needs, and courses necessary to meet these needs.

- **Build a Meeting Schedule that Accommodates all Stakeholders**

  A concern brought up by various stakeholders was the lack of consistency in hosting advisory committee meetings, as well as a lack of purpose during the meetings. We recommend that the advisory committee establish a consistent meeting time that affords all members the opportunity to attend. In addition, it is recommended that these meetings start and end on time, have a clear purpose/agenda, stay on point, and end with action items that are assessed at the following meeting.

- **Establish a clear Mission and Vision**

  An effective organizational structure includes a clear purpose that is authentically created and adopted by all stakeholders. A clear mission and vision can help the committee define the purpose, guide decision making, properly align resources, and increase efficiency and productivity.

- **Funding and Resource Review**

  To begin a planning and implementation process it is necessary to have a clear understanding of currently available resources and funding. We recommend that the advisory committee is updated regularly regarding available funding and other resources relevant to the planning and implementation process. The CTE committee lead could also be responsible for identifying additional funding sources, through local, state, or national grants.

- **CTE Audit Review**

  We recommend the CTE committee use this audit as a reference document to better understand the existing CTE courses and their alignment to Centralia College, and to the needs of the current labor market. CTE leadership can determine, collaboratively, how to make adjustments to the course catalogue based on capacity and need. Beyond looking at labor market projections and trend data, we suggest that the CTE Advisory Committee engage with local business and industry leaders to obtain real numbers around hiring potential and demand. We found through our research, that national and regional trend data do not always accurately reflect local demand and opportunities for our students.

- **Conduct Job-site Visits**

  We encourage school administration and teachers to conduct regular field trips to local business sites to inform decisions around skills, knowledge, and programs they offer. We believe that this practice would be an informative activity for the CTE Advisory Committee.

- **Develop Career Pathways**

  In the effort to align career pathways with the local labor market needs, we recommend that CTE leadership and staff work closely with the local college, along with labor and industry representatives, to design and adopt new CTE courses and pathways. These pathways should culminate with students who possess the skills and knowledge necessary to qualify for employment with business and industry partners.

- **Develop Partnerships with Local Business and Industry**

  New initiatives around CTE promote the idea of erasing boundaries between schools and the community. Recent legislation recommends that CTE programs collaborate with employers, universities, trade unions, city agencies, and other stakeholders to design learning experiences that culminate in industry-recognized skills. It is recommended that a commitment is made to provide time, personnel, and resources necessary to establish and maintain important partnerships with local and regional colleges, labor and industry representatives, employers, and other stakeholders.

- **Creative Staffing, Recruitment, and Re-Training of Teaching Staff**

  Focus group participants noted that the availability of qualified faculty necessary to adopt new CTE courses was a barrier to strengthening the CTE program. It is recommended that creative avenues be explored to efficiently utilize existing staff, while also gaining access to additional qualified teaching staff. Some ways schools are expanding their CTE course offerings are by sharing instructors with local colleges, inviting professionals from local business and industry to provide training, and using virtual and distance learning platforms. Another option is to provide training opportunities for current staff, so that they can expand their expertise and certifications to meet the course offering and staffing needs.

- **Course adoption and Implementation**

  Based on the local labor market demand, it is recommended that corresponding courses and pathways be adopted and added to the course catalog. Countless schools and programs across America are collaborating with community colleges and, in some instances, four-year institutions. Instead of developing entirely new curricula from scratch, schools are utilizing expertise that already exists.

- **Re-branding of CTE Courses and Improved Awareness**

  Qualitative data revealed that the perception of CTE courses is not the same for all stakeholders. Many students still see CTE courses as courses designed for those not interested in going to college. It is recommended that efforts are made to help students, staff, and the community understand that CTE courses are intended to prepare students for careers *and* college. The new initiatives around CTE promote the idea that CTE courses should be designed to appeal to and benefit students who aspire to all different levels of post-secondary education and career pathways.

- **Improve Physical Facilities**

  One major challenge facing CTE programs across the nation is the stigma it carries. Focus groups and interviews with students, CTE staff, and industry leaders indicated that current facilities, along with antiquated tools and technology associated with the CTE programs, perpetuate this stigma and discourage some students from enrolling in CTE courses. When considering facilities, we recommend considering large, multi-purpose spaces that can accommodate various tools, technology and machinery that align with various jobs and industries.

- **Nurture Existing Partnerships and Seek New Partnerships**

  The CTE improvement process is a continuous cycle. We want to emphasize the importance of allocating personnel, resources, and time for a dedicated CTE Liaison/Coordinator to continue the process of building and nurturing community relationships, coordinating committee meetings, monitoring changes to the local employment landscape, and sustaining a focus on the program vision and mission.

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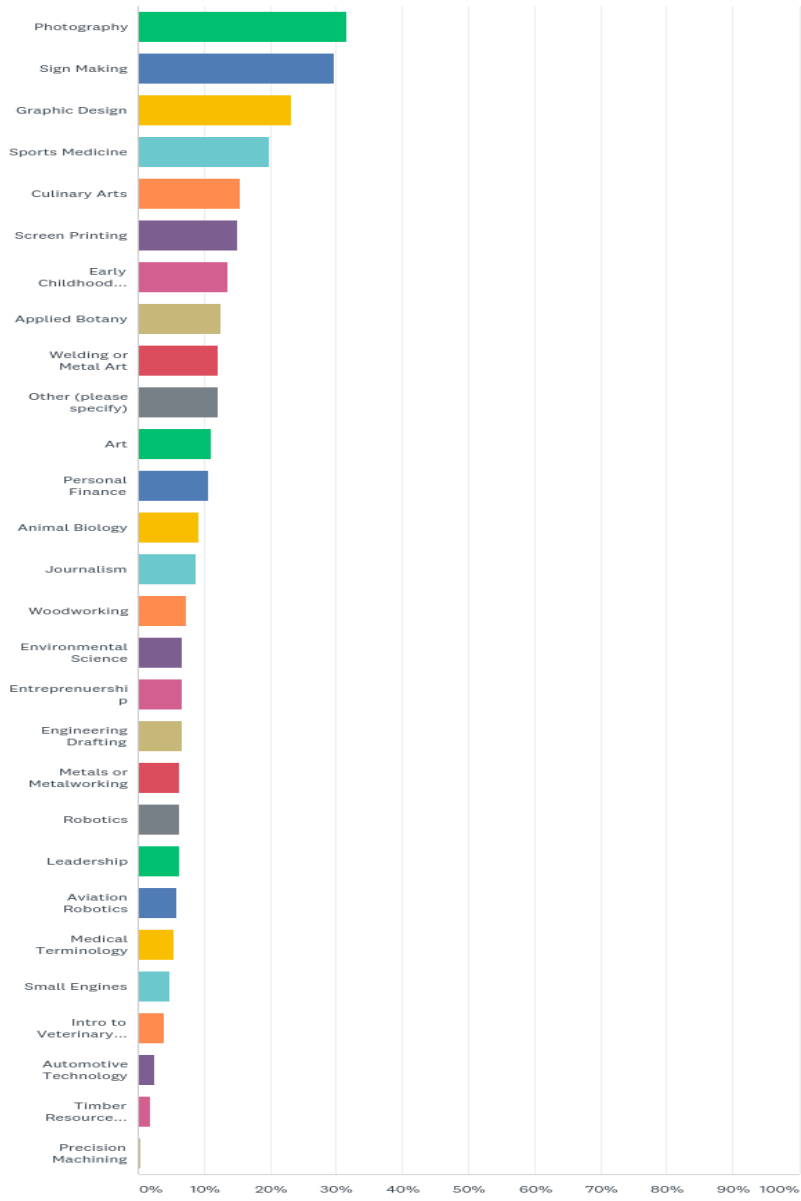
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APPENDIX A

Horizontal bar chart showing percentage of responses for various course options:

Course	Percentage
Photography	~32%
Sign Making	~30%
Graphic Design	~23%
Sports Medicine	~20%
Culinary Arts	~15%
Screen Printing	~15%
Early Childhood...	~14%
Applied Botany	~13%
Welding or Metal Art	~12%
Other (please specify)	~12%
Art	~11%
Personal Finance	~11%
Animal Biology	~9%
Journalism	~9%
Woodworking	~7%
Environmental Science	~6%
Entreprenuership	~6%
Engineering Drafting	~6%
Metals or Metalworking	~6%
Robotics	~6%
Leadership	~6%
Aviation Robotics	~5%
Medical Terminology	~5%
Small Engines	~4%
Intro to Veterinary...	~3%
Automotive Technology	~2%
Timber Resource...	~1%
Precision Machining	~0%

APPENDIX B

Labor & Industries Recognized Apprenticeship Organizations
Aerospace Joint Apprenticeship Committee*
Alta Forest Products+
Apprenti*
Aries Mehcanical Inc. Apprenticeship Committee+
Atarashii
Boilermakers Local 104& Puget Sound Employers Apprenticeship Committee
C&R Tractor & Landscaping, Inc. Apprenticeship Program+
Centralia City Light Apprenticeship Committee+
Certificated Safety Specialist Apprenticeship Program*
Construction Industry Training Council of Washington*
CTS Apprenticeship Committee*
Dimensional Communications*
Evergreen Rural Water of Washington Apprenticeship Committee*
Firestop and Containment Workers Joint Apprenticeship Training Program*
Frontier Apprenticeship & Training+
Glaziers, Architectural Metal and Glassworkers Apprenticeship Committee+
Grays Harbor P.U.D. No. 1 Apprenticeship Committee+
Great Rivers Behavioral Health Organization Apprenticeship+
Greater Western Washington Pipe Trades Apprenticeship Committee+
Hampton Lumber - Morton+
Healthcare Apprenticeship Consortium*
Heat and Frost Insulators Workers Joint Apprenticeship Training Program*
Independent Technicians Automotive Committee (ITAC)*
Inland Empire Fire Protection Apprenticeship Committee*
Inland Northwest Chapter Associated General Contractors Carpenters AC*
International Union of Elevator Constructors, Local 19 - National Elevator Industry
Educational Program*
Johnson Controls Fire Protection Apprenticeship Committee*
Lewis County P.U.D. Apprenticeship Committee+
Northwest Laborers Apprenticeship Committee*
Northwest Line Construction Industry JATC*
Operating Engineers Regional Training Program JATC+
Pacific Northwest Ironworkers and Employers Local #86 Apprenticeship Committee+
Pierce County Meatcutters Apprenticeship Committee+
Pierce County Roofers Apprenticeship Committee+
Power Line Clearance and Tree Trimmers Apprenticeship Committee*
Puget Sound Energy Company Apprenticeship Committee*

SAGE Apprentice Program*

Southwest Washington Electrical Joint Apprenticeship and Training Committee+

Spokane Home Builders Soft Floor and Carpet Apprenticeship Committee*

Town of Eatonville+

Tradesmen Apprenticeship & Comprehensive Training+

UA Sprinkler Fitter Local 669 Joint Apprenticeship and Training Committee*

Washington Association for Community Health*

Washington Cement Masons Apprenticeship Committee*

Washington Construction Teamsters Apprenticeship Committee*

Washington Plasterers Apprenticeship*

Washington Public School Classified Employees Apprenticeship Committee*

Washington State Department of Labor and Industries/Classified Employees Joint
Apprenticeship and Training Committee*

Washington State Fire Fighters Joint Apprenticeship and Training Committee*

Washington State UBC JATC*

Western States Boilermakers Apprenticeship Committee*

Western Washington Carpet, Linoleum & Soft Tile Layers Apprenticeship Committee*

Western Washington Drywall Apprenticeship+

Western Washington Masonry Trades Apprenticeship Committee+

Western Washington Operating Engineers Facilities Custodial Services Apprenticeship
Committee+

Western Washington Painting Apprenticeship+

Western Washington Sheet Metal JATC+

Western Washington Stationary Engineers Apprenticeship Committee+

*Programs in Washington State, +Programs local to the Lewis County Region

Centralia College Certification Programs

Program Title	Credit	Clock
Early child Ed Teacher/Child Care Specialist	48	
State Early Childhood Education Certificate	47-52	
State Initial Childhood Education Certificate (statewide)	12	
State Short Early Childhood Education Certificate – Administration, State Short Early Childhood Educaton Certificate of Specialization-Administration (statewide)	20	
State Short Early Childhood Education Certificate – Family Child Care, State Short Early Childhood Education Certificate of Specialization-Family Child Care (statewide)	20	
State Short Early Childhood Education Certificate – General, State Short Early Childhood Education Certificate of Specialization-General (statewide)	20	
State Short Early Childhood Education Certificate – Infant Toddler Care, State Short Early Childhood Education Certificate of Specialization-Infants and Toddlers (statewide)	20	
State Short Early Childhood Education Certificate – School-Age Care, State Short Early Childhood Education Certificate of Specialization-School Age Care (statewide)	20	
Criminal Investigation	50	
Welding Technology	77	
Medical Office Assistant	56	
Medical Scribe	49	
Emergency Medical Technician	12	
Emergency Medical Responder	5	
Phlebotomy	43	
Home Care Aid	5	
Nursing Assistant- Certified	9	
Office Assistant	48	
Accounting Clerk	53	
Data Analysis	15	

Short-Term Programs

Arc Welding	17
MIG Welding	15
TIG Welding	18
Commercial Truck Driving	12
Phlebotomy for Healthcare Workers	13
NAC Plus, Nursing Assistant Plus	18

Apprenticeship Programs

Early Childhood Education		600
Instructional Assistant	33-36	385
Child Care Assistant/Associate I		150
Child Care Site Coordinator/Associate II		460
Steam Plant Mechanic		803
Inside Wireman	28	576
Welding	55	

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