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CAREER AND TECHNICAL EDUCATION IN VERMONT

Best Practices, Funding Mechanisms, and Comparative State Analysis

Presented to the Vermont Senate Committee on Education

Senator Dick McCormick, *Chair*

Senator Don Collins, *Vice Chair*

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1. EXECUTIVE SUMMARY

This report presents an overview of Career and Technical Education (CTE) in Vermont and nationally. A preliminary analysis of curricular opportunities available through Vermont's CTE programs reveals that while there are many options for students to pursue across the state, programmatic offerings differ at each individual center, meaning that the full slate of CTE offerings is rarely available at any given center. Furthermore, a variety of assessment strategies exist at both the local and national level. Moving past curricular analysis, an exploration of the funding mechanisms used in Vermont reveals additional findings. Although current funding mechanisms highlight the importance of equity, there are efficiency impacts from using a complicated funding formula for CTE finance. Last, a careful comparative analysis across states reveals both strengths and weaknesses for the Green Mountain State. Specifically, these peer state analyses indicate that Vermont would be served by expanding the variety of CTE programs that are offered to its students.



2. INTRODUCTION

As the American economy has struggled to recover from the lingering impact of the Great Recession, employment opportunities remain limited. Given relatively high levels of joblessness, educational stakeholders have faced increased pressure to effectively prepare students for entry into a volatile marketplace. In addition to this emphasis on employment outcomes, educators have continued to search for ways to engage students interested in applied, practical educational methods and exposure to professionals who use skills in real life environments. One solution—Career and Technical Education (CTE)—has emerged as an answer to these problems, providing students with practical, workforce ready skills as well as an engaging approach to learning.

Although CTE programs have been widely implemented across the United States, more information and analysis is needed at the local level. Thus, this report aims to analyze the state of CTE in Vermont from both curricular and financial perspective. Using this analysis, the report then aims to place Vermont into a regional and national context, offering a comparative analysis that highlights the Green Mountain State’s strengths and weaknesses.

Undoubtedly, the issues facing CTE administrators in Vermont are complex. As such, while this report does offer a preliminary analysis, it also offers a framework for future investigation and research. It is the hope of the authors that this framework will serve as a roadmap for analyzing further components of the CTE system in Vermont. This report will address CTE programs from three main angles: highlighting curriculum decisions, analyzing funding mechanisms, and comparing peer state programs. This approach serves as an introduction of the main themes and challenges within the provision of technical education. It also presents potential opportunities for Vermont to leverage within its own CTE structure.

3. CURRICULUM

3.1 Overview

Currently, Vermont operates 15 regional technical centers and two comprehensive high schools approved to offer CTE to adults and high school students. Specific program offerings vary by center, with some providing a technical program intended for in-depth study which is available only to 11th and 12th graders, and others providing a pre-technical program, which prepares 9th and 10th grade students for future technical study. Some programs provide both of these offerings.¹



3.1.1 Career Clusters and Subfields

In Vermont, regional centers and comprehensive high schools have broad topic areas to choose from in presenting curricular programs. These topic areas are known as Career Clusters®, and are based loosely on the blueprint offered by the National Career Clusters® Framework. In contrast to the 16 Career Clusters® described by the national framework, Vermont offers only six clusters: Agriculture and Natural Resources, Arts and Communications, Business Systems, Engineering and Technical Systems, Health and Human Services, and Public Services. Under each of these broad Career Cluster umbrellas are a variety of subfields, such as Government and Public Administration under Public Services.² Despite a diversity of subfields, it is important to note that the choices of individual centers limit student access to some fields. As Vermont CTE Workgroup Coordinator Jay Ramsey noted in an interview, although there are many subfields in which students may choose to study, not all subfields or Career Clusters® are offered at all 17 centers. Each center has discretion in deciding which program they wish to offer to students.

Many centers thus choose to focus on local needs in deciding which programs to offer. For example, rural centers may tend to promote programs in Agriculture and Natural Resources.³ This local control of programming decisions limits the access of all Vermont students to equitable and varied technical program offerings. Nevertheless, local tech centers aim to effectively serve their students by making curricular decisions in part based on student demand (i.e., in the form of a three-year rolling enrollment FTE count).⁴

Figure 1 below describes the distribution of enrollments in the 2012-2013 year by Career Cluster.⁵

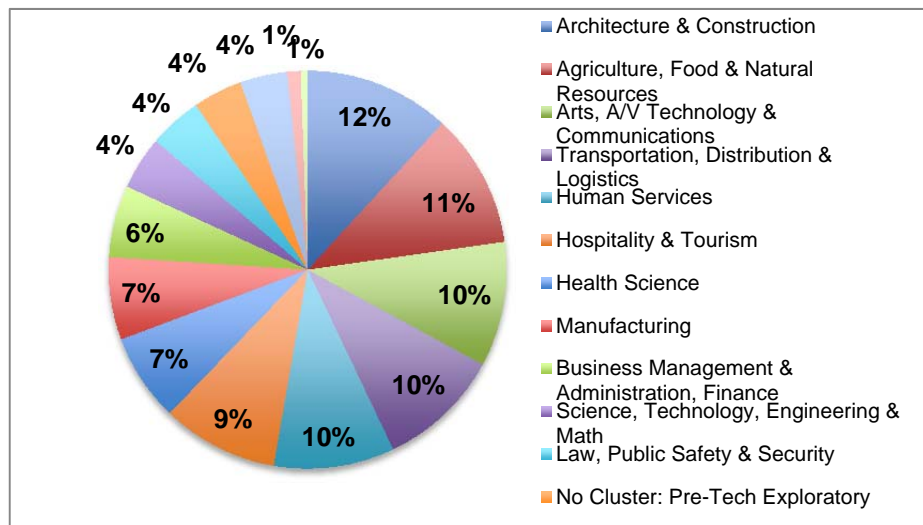


Figure 1. 2012-2013 Enrollment by Career Cluster



3.1.2 New Programs

In order for a program to be offered, it must first be approved by the state through an application process. Among other components, the application includes a program description, assessments, and program endorsements. Program description highlights the specifics of the proposed program (i.e., instructional time allotments as well as how students can transition to the workforce and college). Assessments describe the way in which the proposed program is to both grade and determine the skill level of students as they progress through the program. Program endorsements focus on those outside of the technical center who are supporting the proposed program, such as local businesses and industries committed to working with the technical centers.

Another key in the application process is the proposed funding mechanism for the new program. What will the program cost? Is the project fully compliant with existing state and federal legislation? Applications must seek to address these questions, among others, when discussing funding.⁶

3.1.3 Co-operative Education Programs

Outside of the classroom, CTE Centers also coordinate co-operative education programs (COOPs), where centers build relationships with key industries players. Through COOPs, students are exposed to learning in real-life environments. In Vermont, COOPs are offered through four main work-based learning categories: job shadow, career work experience, cooperative technical education, and apprenticeships. Job shadows allow students to observe professionals in real-time environments spanning two to eight hours. Career work involves short term, unpaid work where students can explore what fields they wish to study. Cooperative technical education allows students to receive a salary as they complete work with employers in their specific field of study. Apprenticeships allow students to maintain a relationship with a professional in a specified field over time, allowing them to truly immerse themselves in a particular field.⁷

3.2 Key Findings

3.2.1 Teacher Evaluations

Assessments for technical centers are not as mundane as tests or quizzes. Rather, technical centers measure the skills that students gain from their studies and work experience. Two assessment options are available for centers. First, centers may opt to assess students through teacher evaluation. Rather than receiving grades from instructional information, students may submit original works in this model, such as compositions, research papers, or artwork. Students are then graded in an engaging and innovative manner, while simultaneously gaining an in-depth understanding of a particular field.⁸



3.2.2 21st Century Skills

Another assessment model, supported by strong national networks, involves public-private partnerships. As of 2010, the Vermont State Board of Education has adopted the 21st Century Skill Plan (P21), created by the Partnership for 21st Century Skills, a national organization that brings together policymakers, businesses, and educational leaders to ensure that students learn the skills and techniques that are crucial for the workforce as well as postsecondary education. The main goal of the Plan is to reflect current Vermont practice and views, ensure that high school graduates have retained adequate levels of knowledge, and integrate skills that are deemed necessary by experts into the workplace and post-secondary educational environments.

For CTE students, P21 provides another method of assessing students' learning—through what are known as formative assessments. Interestingly, teachers do not create these assessments. Rather, assessments are created by industry officials who are experts in the skills required in their particular field. Industry titans such as Apple, Microsoft, and the Princeton Review have offered input into what skills students should learn. For an additional example, it may be helpful to turn to the case of TerraNova Performance Assessments. In order to test formative skills, these assessments offer scenarios and questions in which students must apply content knowledge to unique situations in order to test and improve their critical thinking skills.⁹

3.3 Proposed Future Analysis

In order to effectively understand the curricular decisions of Vermont technical centers, it is important to gain a better understanding of how certain programs impact the employment outcomes of their students. However, data on how students perform after graduation is scarce, and the data that is available is not reliable. At present the Department of Education surveys employment outcomes at the six-month mark and three-year mark. However, these surveys are self-reported and are only answered by a small fraction of previous CTE students. Thus, the results are inconsistent and unreliable.

In order to address this issue of accountability and outcome measurement, Vermont would be well served by developing a more rigorous follow-up process with its graduates. In other states, Departments of Education and Departments of Labor have joined together to connect data on the employment outcomes of their technical education students.¹⁰ Moving forward, Vermont legislators may consider the viability and effectiveness of this joint accountability model.



4. FUNDING MECHANISMS

4.1 Background on CTE Funding Mechanisms

The main mechanisms for financing career and technical education centers across the country can be grouped into four broad categories: 1) foundation grants, 2) unit cost funding, 3) weighted adjustments, and 4) performance-based outcomes. Many states combine elements of each of these approaches within their funding of technical education.

4.1.1 Foundation Grants

State foundation grants are a program that ensures each student within the state receives a set minimum level of education funding. Each state annually determines a threshold level of per pupil spending—often expressed in full-time-equivalent (FTE) units. This metric is then manipulated to account for a number of district attributes (i.e., local wealth, tax rates, school size, student characteristics/special needs). The size of a per pupil foundation grant can vary greatly from state to state. However, since the cost of providing vocational education services varies across states, it is possible that these variances are correlated.¹¹

4.1.2 Unit Cost Funding

State legislators typically address education finance initiatives within their annual appropriations bill. Some states use this legislative process as an opportunity to distribute resources in support of CTE programs. Funding levels in this process can vary significantly across states. The methodology for distributing funds across technical centers also varies across states; however, there are several common metrics that are utilized when designing funding formulas for determining budget allocations (i.e. number of students enrolled in vocational programs, number of teachers required to provide instruction, overall costs of operations). There are a number of other factors that states assess in order to adjust these formulas—program type, student outcomes, and student participation in vocational organizations (i.e., VICA, FFA).¹²

A number of states structure their district funding allocations on enrollment levels. For instance, if a district enrolled five percent of the state's FTE vocational students, that district would be eligible for five percent of the state's CTE funding. In order to consolidate state resources several states (including Vermont) earmark state funding for technical centers. By allocating funding based on the level of student participation these states are able to concentrate resources in areas of greatest demand. One caveat of distributing funding on the sole basis of FTE participation is that it may limit the ability of certain districts (i.e., smaller districts, districts with more capital-intensive offerings) to provide comprehensive technical programs.¹³



Some states allocate funding to technical centers on the basis of “instructional units,” a metric that is calculated by taking the total number of students who participate in vocational education and dividing that by the average class size within a technical center. This type of funding helps to address the increased cost of running programs with small class sizes and higher teacher to student ratios. Additionally, this type of funding mechanism better addresses the increased cost of technical center instructors.

Another form of unit cost funding is funding by cost reimbursement. In this financing mechanism states reimburse districts for all or a percentage of the costs that are linked to providing certain technical programs.* In this framework, district expenditures are dependent on full state reimbursement. This model does not encourage efficiency because districts are encouraged to spend more under this funding mechanism since costs are ultimately compensated.

4.1.3 Weighted Funding

Weighted funding is one way that states attempt to better allocate resources to technical education programs. In this mechanism, weights are used to mathematically inflate the number of FTE students participating in CTE programs. This process increases the resource eligibility for CTE programs. Although the methods for weighting funding vary across states, the end result is the same: weighting leads to students who enroll in technical programs qualify for more educational funding than students who enroll in other instructional areas.¹⁴

4.1.4 Performance Funding

Funding on the basis of performance outcomes is still a relatively new concept in the realm of CTE finance. Indiana and Missouri were the first two states to incorporate this type of funding process for technical education. In this framework states condition their funding support on student participation and performance outcomes. Politically, this mechanism is popular for two main reasons: 1) it promotes economic development, and 2) it increases the accountability of programs to student performance.¹⁵

Under this funding model it is essential that school finance systems adjust for district size. Funding solely on student outcomes may unfairly reward larger urban districts. This disadvantage could be driven by two main trends. First, there are a greater number of jobs available in larger metropolitan areas. More job availability can influence the employments outcomes that are key indicators within performance funding. Second, economies of scale may give larger districts an advantage when purchasing equipment or offering programs. For these two reasons, it is important to consider adjusting the performance funding equation to control for district size.

* District costs are reimbursed on a two-year lagged cycle that is based on a formula that controls for property values and student enrollments.



An additional concern of this financing framework is that the availability of jobs may be endogenous to location; thus, technical centers in certain districts will have stronger placement outcomes than technical centers in less economically developed areas. Economies of scale have the potential to give centers that serve larger districts the ability to offer a larger array of programs. These concerns are all secondary to a larger philosophical question: *does performance-based funding actually support the core mission of career and technical education?* States and districts may vary technical education for a variety of reasons beyond the quantifiable outcomes on the job market. A simplified system of performance-based funding could penalize technical centers that aim to provide a supplemental learning environment for students who are preparing for college rather than students who plan to pursue employment immediately after high school.

Indiana has used outcome-based financing system since the 2002-2003 school year. Within this outcome-based system districts earn an additional \$550 for each student who receives a certificate of achievement in a technical field, \$1,000 for each student in programs linked to high-demand labor markets, \$700 for each student in moderate-demand fields, \$300 for each student in a less-than-moderate demand field, and \$250 for each student enrolled in apprenticeship programs.¹⁶

4.1.5 Evaluating Efficiency and Equity Across Mechanisms

Ultimately the funding programs have to value the tradeoff between equity and efficiency of technical education provision. Many of the funding mechanisms outlined above are designed to increase the equity of access to career and technical programs for students. However, as states add numerous adjustments to their funding formulas for technical education, they also add layers of complications that could reduce the efficiency of the provision of CTE programs. Moving forward legislators may consider this balance as they weigh these two objectives of equity in funding allocations and efficiency of funding mechanisms.

4.1.6 Trends in National, State and Local CTE Funding

In recent years, state governments across the country have faced budgetary pressures on education funding. In particular, funding for career and technical education has declined in many regions across the country. Furthermore, on a national level there have been declines in the funding for secondary schooling in CTE. However, the most recent analysis indicates that federal funds account for only five percent CTE expenditures—meaning that state and local governments are responsible for providing the remaining funds.

The most significant of recent CTE funding trends appears at the local level. Over 20 percent of school districts decreased their funding levels for secondary CTE in 2012;



meanwhile, over 15 percent of local school districts decreased their funding for postsecondary CTE programs (See Figure 2).¹⁷

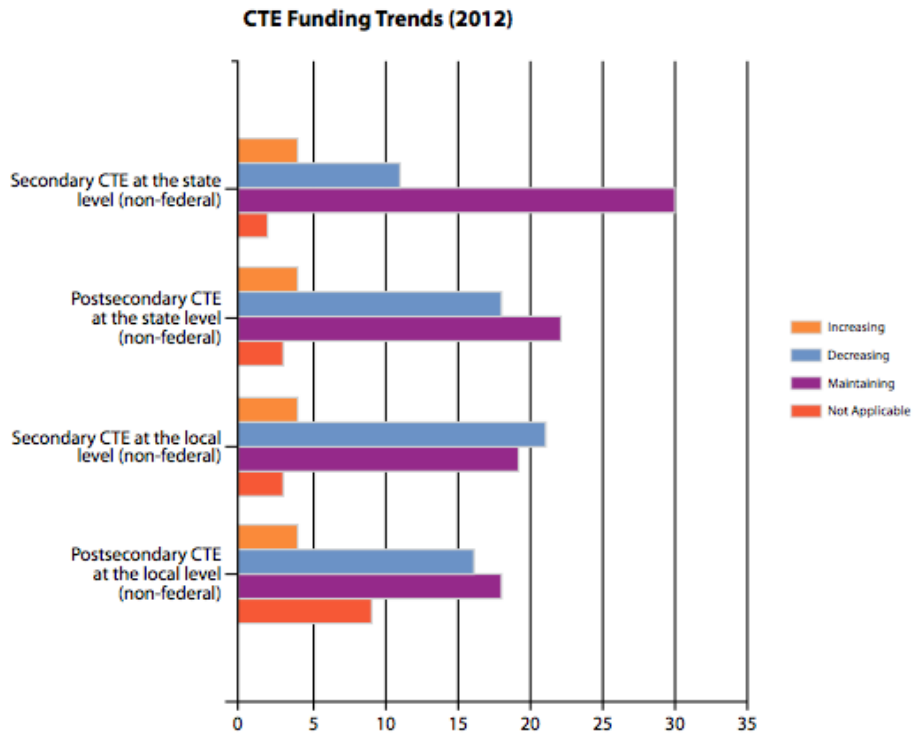


Figure 2. CTE Funding Trends (2012)
(Source: NASDCTE, 2013)

4.2 Overview of Vermont's CTE Funding

In Vermont, technical centers are financed through a combination of local, state, and federal funds. This process aims to effectively allocate resources to centers on the basis of costs and enrollments. At present Vermont's CTE funding mechanism most resembles the Unit Cost Funding structure. Specifically, Vermont centers the bulk of its CTE financing decisions on FTE student participation in centers and programs. Additional key points and structures in the funding process will be highlighted below.

4.2.1 Statutes Concerning Funding

The Vermont Education Statutes articulate the procedures for funding of all public education in the state – including technical centers. Chapter 37 of Title 16 articulates, “all Vermonters should receive educational services that enable them to master the skills essential for further education and training or for successful entry into or advancement in the workplace.”¹⁸



4.3 Key Findings

The funding of the Vermont technical education program is highly complex. In order to better understand the landscape of funding decisions within the state, it is helpful to first highlight the specific channels through which technical centers in the Green Mountain State are funded. By outlining this process in a systematic way, it is possible to better identify opportunities to streamline and improve current funding mechanisms.

4.3.1 Tuition Rate Setting

Each technical center sets an annual tuition charge for secondary technical education. This rate is based on the actual cost of the courses and programming offered by the center; although tuition setting is linked to a center's actual costs, there is a significant range in tuition costs across different tech centers in the state.¹⁹ Once the rate is set, this tuition is then charged to the associated school district within Vermont based on the average of the district's three prior years' full time equivalent student enrollment in the center.²⁰

The tuition of Vermont technical centers is funded through two main channels. A sending school district compensates its technical center 87 percent of the base education amount for each full-time equivalent student from its district. Additionally, the general assembly provides an annual supplemental assistance grant per full-time equivalent student. This grant is equal to 35 percent of the base education amount in that year. The base education amount for this year (FY14) is \$9,151, so 35 percent is \$3,203, nearly \$8.7 million this fiscal year.

4.3.2 Transportation Assistance

In order to facilitate students' enrollment in technical education courses, Vermont has prioritized increasing the access that students have to the physical centers. Transportation is central to addressing this issue of access. Transportation assistance is paid from the education fund to school districts that provide transportation to and from technical education programs.²¹ In FY14 funding for transportation assistance totaled approximately \$1.5 million.²²

4.3.3 Salary Assistance

The state also supports technical education through salary assistance for several crucial staff members of a technical center. There are several positions that are directly identified for salary assistance. These positions include five unique roles: a director of technical education; a person whose principal duty is to provide guidance services for technical students; a person whose principal duty is to find job training opportunities for students during the time they are enrolled at the technical center; an assistant director for adult



education; an assistant director of technical education.”²³ In FY14, the total salary assistance provided in Vermont came to nearly \$2.2 million.²⁴

4.3.4 Federal Funding

Federal grants supplement the funding for technical education that is received from local and state sources. The Carl D. Perkins Career and Technical Education Improvement Act of 2006 (Perkins IV) is the primary source of federal funding for CTE programs across the nation. The Perkins Act identifies five key programs in career and technical education: 1) Basic State grants, 2) Tech Prep grant program, 3) the Tribally Controlled Postsecondary Career and Technical Institutions grant program, 4) National Programs, and 5) Occupational and Employment Information. Of these five programs, the Basic State Grants (Title I) is largest, accounting for over 90 percent of Perkins appropriated funds.²⁵

Perkins Act grants comprise less than two percent of the overall U.S. Department of Education budget. However, these grants have an expansive reach; they serve more than 14 million career and technical education students across the country including those at high schools, area technical centers, community colleges, and other institutions. National funding helps to incentivize the contribution of local and state governments to CTE program funding.²⁶

5. VERMONT IN CONTEXT: A COMPARATIVE ANALYSIS

5.1 Overview

Having developed a clearer picture of the curricular options and funding mechanisms endorsed within Vermont, it is now possible to delve into a comparative analysis that contrasts those characteristics found in Vermont to the mechanisms used for CTE implementation in other states. This comparative analysis serves a dual function, highlighting the strengths and weaknesses of CTE in Vermont while simultaneously isolating possible best practices and steps for improvement.

5.1.1. Selection of Case Studies

Given the wealth of data collected by the Department of Education under the Perkins Act, it is possible to draw from a wide pool of cases. However, given the inherent differences in state topography and demography, it is clear that comparison to many states does not yield much valuable insight to policymakers and stakeholders in Vermont. As such, the analysis presented in this section has narrowed the possible field of case studies by restricting cases on the parameters of regional proximity and student enrollment. This pool of restricted cases was then analyzed and winnowed again based on the frequency with which the states have been used in previous comparative analysis—eliminating cases such as Alaska, which appear based on student enrollment but obviously differ from Vermont in a number of significant categories.²⁷



Ultimately, five states were selected for comparison: Maine, Massachusetts, New Hampshire, Rhode Island and Wyoming.

5.1.2. Inherent Difficulties in Comparative Analysis

It is important to note before advancing too far into analysis that there are inherent difficulties in comparing CTE across states. While the Perkins Collaborative Resource Network and other organizations such as the National Association of State Directors of Career Technical Education Consortium (NASDCTEc) and the Association for Career & Technical Education (ACTE) provide a wealth of data, this data is in of itself subjective given differing state definitions of what exactly constitutes CTE. Keeping this variance in mind, when data on the same topic differs between two sources—as, for example, in the case of slightly differing student enrollment figures for Vermont provided by the ACTE and the NASDCTEc—non-random error based on definitional differences must be considered in addition to random error.²⁸

5.2. Key Findings

Having established case studies and discussed the inherent difficulties of cross-state analysis, it is now possible to conduct an initial, macro-level analysis comparing Vermont to the selected case studies. For the sake of condensing this analysis, indicators have been divided into two key categories: measures of curricular variation and measures of financial variation.

Curricular measures include the number of Career Clusters® offered by a State CTE system during the 2010-2011 academic year, the number of secondary and post-secondary students enrolled in a CTE program during the 2010-2011 Perkins Evaluation Cycle, and the percentage of students receiving an industry recognized credential, certificate or diploma upon graduation during the 2011-2012 Perkins cycle. Measures of financial variation include the Perkins Title I (Basic State Grants) funding allocations for FY 2013, Perkins Title I funding per-CTE student during the last available data cycle (2010-2011), and total funding per-student across all state-educational activities at the secondary and post-secondary level.



5.2.1. Curricular Indicators

Table 1. Curricular Indicators

	CTE Enrollment	Career Clusters ® Offered	Accreditation Received
Vermont	9,461	6 (modified)	72.3%
New Hampshire	21,057	15	96.0%
Maine	17,103	16 (modified)	55.5%
Massachusetts	118,152	10 (modified)	55.4%
Wyoming	24,867	16	32.1%
Rhode Island	20,733	16	38.9%

Source: See Appendix A for source citations

5.2.2. Financial Indicators

Table 2. Financial Indicators

	Perkins Funding	Perkins Per-CTE Student	State Spending Per-Student
Vermont	\$4,214,921	\$445.50	\$15,274
New Hampshire	\$5,235,475	\$271.16	\$12,383
Maine	\$5,235,475	\$333.85	\$12,259
Massachusetts	\$17,323,922	\$160.10	\$13,590
Wyoming	\$4,214,921	\$169.49	\$15,169
Rhode Island	\$5,235,475	\$275.40	\$13,699

Source: Please See Appendix A for source citations

5.2.3. Key Findings from Peer States

Below are the core key findings for each state within our comparison analysis: Maine, New Hampshire, Massachusetts, Wyoming, and Rhode Island.

Maine has focused on improving academic skills within the CTE curriculum. In Maine’s Math-in-CTE program, secondary CTE teachers collaborate with mathematics teachers to create a program that combines the associated professional development in CTE with Math-in-CTE lessons that are implemented in the CTE classroom. Maine’s Literacy-in-CTE program incorporates the same goals for reading and language arts.²⁹

New Hampshire has also focused on its academic-CTE integration, specifically using Math-in-CTE to integrate math in culinary, marketing, building trades and automotive programs. Additionally, New Hampshire has implemented five new programs: Broadcast Technology, Computer Programming, Engineering and Fire Science. Furthermore, there has been increased focus on curricular variation within the Engineering program and New Hampshire has created new integrated engineering courses. New Hampshire CTE expanded its assessments of nineteen technical skills, such as restaurant management and welding technology.³⁰ Another unique feature of the New Hampshire CTE system is their e-learning program LearnMate® which provides an interactive technology education; for



example it includes a fully integrated simulations of the design and machining process. This system enables students' access to the courses from home.

Massachusetts has modified the National Career Cluster Framework by having eleven career clusters, which is meant to provide broader instruction. The architecture, finance, human services, and marketing clusters are not offered under Massachusetts CTE program. The recently created Legal and Protective Services Cluster modifies the government & public administration cluster. Other recent changes to the Massachusetts CTE include seven new additional programs including horticulture, environmental science and technology, and facilities management. These changes made following a public comment period in which comments were submitted from the Program Advisory Committee members across the state, licensing authorities, and the public. These comments were then shared with CTE revision teams before submitting a draft to the Department of Education.³¹

Like New Hampshire, Wyoming also offers a CTE online program. However, the Wyoming Switchboard Network (WSN) created in 2008 is a more substantive distance education program. Rather than a supplement to physical courses, WSN has its own catalog of current course offerings. The WSN allows students in rural communities the opportunity to enroll in courses that otherwise would not have been offered. The program contains a video element, called The Wyoming Equality Network (WEN). WEN is an intra-state network that connects CTE schools and allows for two-way interactive Internet Protocol (IP) videoconferencing system. Not only can WEN be accessed in public high schools but also may be accessed and utilized by community colleges.³² The final new initiative Wyoming has added a goal to create career academies, which center CTE and academics on a specific career theme. This "career magnet" framework allows academic and technical teachers to work together and focus on students within a particular career group.

Rhode Island also adopted several career academies. One example is the New England Laborers'/Cranston Public Schools Construction and Career Academy. Rhode Island CTE is allocating more resources to three areas: information technology, medial/healthcare, and pre-engineering/robotics. For example, in order to increase innovation, last year the Rhode Island General Assembly appropriated start-up funding for twelve schools to expand the three aforementioned programs.³³

5.2.4. Comparing Vermont

Even a cursory glance at the comparative analysis above reveals clear strengths of the Vermont CTE system. Due in large part to a low student enrollment, Vermont receives nearly \$110 more per student in Perkins Title I funding than the next closest comparison case. Since Perkins Title I funding is appropriated based partly on a state's population of certain age groups, Vermont's lower student participation in CTE systems allows for the increase in per-student funding. Furthermore, Vermont boasts the second highest



accreditation rate of the selected case studies. It is not a stretch to link high accreditation rates to successful curricular design that has provided students with necessary skills to succeed in the workforce.

Despite these positives, several distressing trends also emerge through comparative analysis. For example, even while pacing the field in spending per student, Vermont has implemented 6 of the 16 nationally recognized Career Clusters®, and has done so in a modified fashion. Although some reports that have carefully evaluated Vermont’s modified “super” clusters argue that the Green Mountain State has in fact managed to offer 14 clusters through its modified format,³⁴ Vermont would still lag behind Maine, New Hampshire, Rhode Island and Wyoming even if this were taken to be the case. Clearly, Vermont may be challenged in the future to expand curricular offerings in order to embrace the remaining clusters.

The variety in CTE provision across the comparison states demonstrates that there are many different approaches to developing and instituting quality CTE programming. This peer analysis is particularly informative at highlighting different methods of modifying cluster offerings. Beyond expanding the modified clusters, Vermont may look to other states in enhancing post-secondary articulation agreements. In addition to linking the CTE system to viable careers, states also need to link the CTE curriculum to postsecondary institutions. It is vital for students to have a clear pathway from CTE programs to postsecondary schooling to better facilitate career planning. Most states currently have CTE agreements solely on a local level, which significantly limits the transferability of credits for students.

States vary in implementing post-secondary transfer credit agreements. The Vermont Act 77 (S.B. 130) similarly aims for dual enrollment at no expense to the students. However, Vermont does not yet have a state-level policy to formally oversee transfer agreements between CTE programs and postsecondary institutions within Vermont. Currently nine states (Colorado, Florida, Hawaii, Indiana, Maryland, Mississippi, North Carolina, Oklahoma and Washington) have full statewide credit transfer programs or agreements in place. One example is Colorado's Advanced Credit Pathways program, which has been praised by CTE for allowing students to easily transfer credits to Colorado's community colleges. The Advanced Credit Pathway includes a statewide Content Team, which reviews and approves course curriculums that fit the transfer credit guidelines to the Colorado State Faculty Curriculum Committee.³⁵

In comparison to the other five states Vermont surpasses each one in postsecondary credentials, with a 70.5 percent completion rate.³⁶ While the lack of a statewide articulation agreement does not seem to influence the participation of postsecondary education, it is a valuable option for the future.



A summary of Vermont’s comparative rankings across the financial and curricular measures offered in this report can be seen below:

Table 3. Comparing Vermont

	Ranking
CTE Enrollment	6
Career Clusters ®	6
Accreditation Rate	2
Perkins Funding	5 (tie)
Perkins Funding Per-CTE Student	1
State Spending Per-Student	1

Source: Please See Appendix A for source citations

5.3. Proposed Future Analysis

Two possible steps for future research seem to be the most logical, with both involving direct comparisons on the micro-level. First, it may be helpful to contrast Vermont directly with a distinctive CTE structure offered by a comparison case—preliminary research including an interview with Guy Jackson, CTE Section Supervisor for Wyoming, suggests that this approach will likely yield interesting results. Second, it may be helpful to isolate individual schools on the micro-level, and contrast their curricular and financial approaches with other schools across state borders.

6. CONCLUSION

This report examines CTE programs from three main angles: highlighting curriculum decisions, analyzing funding mechanisms, and comparing programs in peer states. This analysis presents a foundation of knowledge on the provision of CTE both in the state of Vermont and nationally. As Vermont further evaluates its CTE programs, it should consider the ultimate mission for these programs. Once these core goals are established, it is important to understand the tradeoffs for different policy initiatives—for both curriculum and funding decisions. Overall, this analysis will better inform future conversations on CTE program legislation. As CTE programs expand their role as a viable tool for education and economic development, this report will continue to be a valuable resource for Vermont legislators to utilize when considering curriculum and funding decisions for these programs.



APPENDICES

Appendix A. Sources for Comparative Analysis, By Indicator

CTE Enrollment:

OVAE Enrollment Statistics, <https://www.acteonline.org/stateprofiles.aspx> and <http://cteworks.careertech.org/state-profile/>

Career Clusters ® Offered:

2010-2011, National Association of State Directors of Career Technical Education Consortium
<http://cteworks.careertech.org/state-profile/>

Accreditation Rate:

2011-2012, Perkins Collaborative Resource Network, Core Indicator Report (Custom Data)
http://cte.ed.gov/accountability/reports/report_acct1.cfm?p=4

Perkins Funding:

FY13, Perkins Collaborative Resource Network,
<http://cte.ed.gov/perkinsimplementation/titlei.cfm>

Perkins Funding Per-CTE Student:

2010-2011, FY10 Perkins Title I Allotments, Ibid
<http://cte.ed.gov/perkinsimplementation/titlei.cfm>,

OVAE Enrollment Statistics, <https://www.acteonline.org/stateprofiles.aspx> and <http://cteworks.careertech.org/state-profile/>

State Funding Per-Student:

U.S. Census Data, FY11, <http://www.governing.com/gov-data/education-data/state-education-spending-per-pupil-data.html>



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- ¹⁴ Ibid.
- ¹⁵ Ibid.
- ¹⁶ Ibid.
- ¹⁷ National Association of State Directors of Career Technical Education, *A Look Inside: A Synopsis of CTE Trends*. (February 2013).
- ¹⁸ Vt. Stat. Ann. tit. 16, § 1521.
- ¹⁹ James, Brad. Personal Interview. 31 Oct. 2013.
- ²⁰ Vt. Stat. Ann. tit. 16, § 1552.
- ²¹ Vt. Stat. Ann. tit. 16, § 1563.
- ²² James.
- ²³ Vt. Stat. Ann. tit. 16, § 1565.
- ²⁴ James.
- ²⁵ *A Look Inside: A Synopsis of CTE Trends*.
- ²⁶ Ibid.
- ²⁷ Association of Career & Technical Education, *Alaska State Profile*, <https://www.acteonline.org/stateprofiles/> (2013).
- ²⁸ Note that the Association of Career & Technical Education and the National Association of State Directors of Career Technical Education Consortium offer different numbers.
- ²⁹ National Association of State Directors of Career Technical Education Consortium, *Maine State Profile*, [http://cteworks.careertech.org/state-profile/details/maine\(2013\)](http://cteworks.careertech.org/state-profile/details/maine(2013)).
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- ³¹ Massachusetts Department of Education, *Vocational Technical Education Frameworks*, <http://www.doe.mass.edu/cte/frameworks/drafts/>



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