

Alaska career pathways: A baseline analysis

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Executive summary

This report details the findings from a 2013 statewide study of career pathways (CP) and programs of study (PoS) in secondary districts in Alaska. Twenty-seven of Alaska's 54 districts provided data around the maturity of their CP/PoS, the availability of different CP/PoS, how career planning is addressed, and the availability of courses and PoS in the *Health Sciences* cluster. The differences between urban and rural communities are often noted in conversations around education, programming and policy in Alaska, and the data in this report reflect this established phenomenon. The contribution of this report is in helping to demystify and contextualize some of these known differences, and to make differentiated recommendations for moving forward.

Career pathway maturity

As CP/PoS are complex networks encompassing the contributions of many partners and spanning students' experiences from secondary to postsecondary and into careers, certain components of these systems are more developed than others. Maturity was assessed on a 10-component framework; urban districts indicated a higher level of development than their rural counterparts in all areas. Though all districts ranked *Aligned Secondary & postsecondary curriculum* and *Legislation & policy* among their most developed components and *Accountability & evaluation systems* and *Guidance counseling & advising* as their least, the rank order of other components varied by district type. The findings suggest that some implementation challenges and needs are universal, whereas others will require differentiated approaches. Of the 10 components, districts reported that their current initiatives are primarily focused on *Guidance counseling & advising*.

Career pathway availability

When reviewing the availability of PoS within the 16 national career clusters, urban districts provide more choice of both courses and PoS. The three most widely expanded career clusters are *Architecture & Construction*; *Health Sciences*; and *Transportation, Distribution & Logistics*. The least developed clusters statewide are *Law, Public Safety, Corrections & Security*; *Government & Public Administration*; and *Marketing, Sales & Service*. With the exception of *Architecture & Construction*, courses are offered in isolation (outside of a PoS) in about half of the districts, suggesting an opportunity to expand PoS in the districts that already have developed curricula. The data also suggest opportunities to develop new PoS, especially in rural areas.

Career planning

Career exploration and planning are integral components of a CP/PoS, and are operationalized and made tangible for students via a Personal Learning and Career Plan (PLCP). Forty-two percent of districts reported that they are engaging all students in developing PLCPs, 43% are doing this with some students, and 15% are not currently engaged in PLCP activities. The districts overwhelmingly reported the use of the *Alaska Career Information System* (AKCIS), and indicated support for engaging in these activities in the middle grades.

Health Sciences

Statewide, 16 districts reported that they offer courses in the *Health Sciences* cluster, and 14 offer industry certifications as part of the secondary curriculum. Where *Health Sciences* are offered, students have the opportunity to engage in exploratory curricula, and to take foundational courses before they narrow their focus in a specific PoS. As Alaska seeks to expand the availability of secondary PoS, growing exploratory and foundational offerings is an area of opportunity. Data also revealed that the PoS that are currently available prepare students for Associate degree or certificate programs, with less focus on professional degrees. Expanding offerings in this cluster to include the gamut of career pathways is another area of opportunity for the state.

Implications

The availability of CP/PoS in Alaska is largely tied to resources. Existing resources to be capitalized upon include enthusiasm for the initiative, strong partnerships, Tech Prep, and community support. Emerging resources are career planning and PLCP programming, and cross-district partnerships in rural areas. Limitations to the growth and expansion of CP/PoS include funding, recruitment and retention of qualified staff, technical assistance, relevant professional development opportunities, and community resources. Advancing these initiatives will require attention to and accommodation of these strengths and challenges.

Recommendations

This study was the first statewide attempt to address the maturity and implementation of CP/PoS in Alaska. Methodologically, it provides some recommendations for future studies including developing clarity and consistency of definitions, better intentionality in linking survey questions to respondent knowledge, and using research methods to complement – rather than duplicate – existing datasets. Programmatically, the districts need support to implement CP/PoS, and should explore and engage differentiated approaches. The state is also poised to do strategic planning and to engage in outcomes assessment around these initiatives. Future research should include instrument modification and replication of these data, postsecondary participation, follow-up studies to contextualize and explain observed trends, research around best practices, and studies of student experiences and outcomes.

Introduction

This study was a collaborative effort to develop an inventory of career pathways and programs of study (CP/PoS) in Alaska. It was jointly commissioned by the *Alaska Career Pathway Task Force* and the *Alaska Health Career Pathways Core Team*. Data collection was directed by the University of Alaska Anchorage's *Center for Alaska Education Policy Research (CAPER)*, and the analysis was completed by the University of Alaska Anchorage's *College & Career Pathways Department*. The study sought to answer the research question,

What is the current status of Career & Technical Education (CTE) programs in the secondary educational system in Alaska?

The objectives for the study were:

- Identify existing CTE programs
- Identify the state's progress toward implementation of CP/PoS
- Identify strengths and opportunities
- Identify best practices
- Understand contexts, challenges, and priorities for CTE programming and CP/PoS implementation
- Provide data to support efforts around new legislation and funding for a comprehensive statewide CTE system

At the time of publication, the data used to inform this analysis are already one year old. As the data indicated tremendous activity and support around these initiatives, it is important to note that significant progress and positive change has been made since data were collected. This report serves as a baseline analysis for 2012-2013 activities, and program growth in the short timeframe between the study and its publication is evidence of the strength and positivity around CTE and CP/PoS initiatives.

Context for study

Vocational education was initiated in 1917 as a federal initiative to support economic development and national defense. Over the following 60 years, vocational education programs also received federal attention for their capacity to support war efforts, to spur new industries, and to combat unemployment (US Department of Education Office of Vocational and Adult Education, 1993). Though the economism of these objectives continues to affect CTE's reputation (Dare, 2006), "in the last few decades vocational education has been transformed from training students for relatively low-skilled occupations to educating students for higher-skilled careers that have greater opportunities for advancement" (Offenstein, Moore & Schulock, 2009; p. 2).

In 1976, the Educational Amendment Act authorized the National Assessment of Vocational Education, which was completed in 1980 and led to the creation of the Carl D. Perkins Vocational Education Act of 1984. The Perkins legislation has been reauthorized three times; with each

iteration focusing more on improved access for minorities, students with disabilities, and nontraditional gender representation in the technical fields, it transformed vocational education into a career development program fostering upward socioeconomic mobility. The Perkins legislation also made provisions for partnerships between secondary schools, industry, employers, and postsecondary education, and focused on strengthening transitions from school to work (US Department of Education Office of Vocational and Adult Education, 1993). Tech Prep was created as a strategy in 1990, but assessment of this program revealed that the initiative did not have its intended impact on college attendance (Bragg, 2001; Dare, 2006; DeLuca, Plank & Estacion, 2006; Lewis, 2008; US Department of Education Office of Vocational and Adult Education, 1993), and that students needed a clearer sequence of study.

The latest iteration of Perkins legislation in 2006 instituted the term “Career and Technical Education” (CTE), and career pathways was identified as a strategy and framework for integrating educational and career planning. “Rather than viewing each step in isolation, the goal is to reconceptualize education as a pathway spanning high schools, colleges, and workplaces” (Hughes & Karp, 2006, p. 1). Its requirements to integrate academic content with technical trades aimed at providing students with a solid foundation for lifelong learning and earning. Hull (2005) defines career pathways as sequenced and articulated academic and CTE courses that start at the secondary level and continue through a postsecondary credential (occupational endorsement, certificate, or degree) and into the workplace. Though they start in the adolescent years, these pathways span an individual’s career, offering ongoing opportunities for professional development needed to maintain currency with changing industry needs, as well as stackable credentials that allow individuals to pursue increased levels of responsibility and earning potential in their given field (Jacobs & Warford, 2007).

To make career exploration accessible and undaunting to young people, the US Department of Education uses the Career Clusters model to group careers by like characteristics. Occupational choices are condensed into 16 clusters or groupings of jobs¹, which include over 70 pathways leading to nearly 2,000 different career specialties. Students connect their interests and values with general and transferrable skills at the cluster level, which they are later prepared to develop to specialization through programs of study. In this process students can be intentional and strategic in their career and educational planning, narrowing their focus as they develop knowledge of self and career opportunities. McClenney & Dare (2013) posit that this model moves “beyond exposing students to isolated...practices, seeking instead the full-scale implementation of high-impact, evidence-based practices woven into clear, coherent, and structured student pathways” (p. 1). Career pathways integrates self-exploration, academics, career and technical education, and hands-on learning experiences into thoughtful goals which students are able to set and attain.

¹ See the National Association of State Directors of Career and Technical Education Consortium’s *Career Clusters* page for further information: <http://www.careertech.org/career-clusters>

The preliminary data around these initiatives is limited (Lambeth, Joerger & Elliot, 2009), but promising. Most US high school students (58.1%) participate in some kind of CTE experience and take at least one CTE course, regardless of race or economic background (DeLuca et. al, 2006). The benefits of career pathways include reduced high school drop-out rates (Castellano, Stringfield & Stone, 2002; Plank, 2001), better secondary academic outcomes (Castellano, Sundell, Overman & Aliaga, 2012; Stone & Aliaga, 2005), more engaged and applied learning (DeLuca et. al, 2006; Folkers, Green, Hinckley & Mills, 2012), increased college enrollment (Bragg, Loeb, Gong, Deng, Yoo & Hill, 2002; Silverberg, Warner, Fong & Goodwin, 2004), improved transitions to workforce and postsecondary education (Alfeld & Bhattacharya, 2012), reduced need for developmental education (Bragg & Rudd, 2007), and higher college graduation rates (Kotamraju, 2007).

In Alaska, *Vocational Technical Education Providers (VTEP)*, an organization representing over 30 secondary and post-secondary educators, businesses and industry, and community programs, and statewide agencies, came together in 2002 to create the *Alaska Tech Prep Consortium*. The intent of the consortium was to align secondary and postsecondary programs of study and improve the quality of existing Tech Prep opportunities statewide. For more than 10 years, the organization supported staff and volunteer capacity to facilitate the development of partnerships between secondary and post-secondary education for aligned curriculum across the state of Alaska. The *2010 State of Alaska Career and Technical Education Plan* sought to operationalize state objectives, addressing “the individual need for career preparedness as well as the broader social need for a training and education system that is efficient, effective, and coordinated with regional and state current and future workforce needs” (p. 2). It seeks to develop programs that are inclusive, comprehensive, and accessible, and to achieve this goal through coordination, cooperation, and collaboration.

For Alaska, much of the difficulty in providing consistent and comprehensive CTE lies in its unique geographic and demographic challenges. The vast majority of non-Native students attend school in one of the “urban” districts. Often termed the “Big 5” – Anchorage, Fairbanks, Kenai, Mat-Su and Juneau – these districts resemble schools outside of Alaska; there are large, comprehensive high schools, and elementary schools have at least one if not more classes for each grade level. Conversely, in many rural communities, especially villages outside of the larger “hubs,” students attend K-12 schools. Rural and urban districts also differ demographically; while not all students in rural and remote districts are Alaska Native, the majority of students in districts in the northern, western and southwestern portions of the state are indigenous; and ethnic and urban/rural differences correlate with differentials in student achievement (Alaska Department of Education & Early Development, 2013; Martin & Hill, 2009; McDiarmid & Hill, 2010). As such, rural and remote schools face challenges different from their urban counterparts, ranging from higher teacher turnover to increasing fuel costs that strain budgets. In many places there is also a disconnect between the community and the educators, who are overwhelmingly non-Native; 20% of the teachers hired by districts each year are prepared in the state of Alaska, less than 5% of certificated teachers are indigenous people, and fewer yet are administrators (Hill & Hirshberg, 2013).

Though Alaska’s commitment to CTE is clear in its investments, little has been done to study the processes or how they manifest in different parts of the state. Because career pathways is, by definition, a collaborative effort engaging students, teachers, secondary systems, employers, parents, communities, and post-secondary programs, a clearer understanding of how these relationships and processes happen “on the ground” is a necessary starting point for conversations around systematic program improvement or improving progress toward targets and outcomes.

Method

Data for this study were collected in the spring of 2013. As the objective for the study was to develop a statewide inventory of CP/PoS work, a questionnaire was deemed the most appropriate instrument for collecting data around secondary district activities and curricula. The instrument was developed by the *Alaska Career Pathways Task Force*² and, to ensure construct validity, was vetted through the *University of Alaska Tech Prep Community of Practice*³.

Superintendents at each Alaskan school district were contacted by phone to introduce and elicit support for the study. Questionnaires were subsequently mailed to superintendents all 54 districts, and follow-up phone calls were used to encourage participation and assist in questionnaire completion.

The surveys were to be completed by Superintendents or their designees, though each district’s approach to filling out the survey instrument varied. Formatting and pronoun usage in the responses suggest that some districts discussed the questions in a committee, whereas other surveys were completed by an individual.

The survey contained three sections covering four topical areas:

- I. **CP/PoS maturity** - The first part of the survey was intended to identify the maturity of CP/PoS implementation by asking districts to rate their level of performance against 10 established standards for successful programs of study.
- II. **CP/PoS availability** - The second part of the instrument asked districts for an inventory of course offerings and CP/PoS around the 16 national career clusters.
- III. **Personal Learning and Career Planning (PLCP)** – Another section of the instrument asked districts quantitative and qualitative questions about how they engage students in career planning and exploration.

² The *Alaska Career Pathways Task Force* was an ad hoc group of educators, industry partners, contractors, and community members seeking to promote the implementation and sustainability of the career pathways model.

³ Now termed the *University of Alaska Transition Coalition*, this group is comprised of representatives from campuses across the state who work with local school districts for Tech Prep articulation.

- IV. **Health CP/PoS** - The final part of the instrument asked districts questions around CP/PoS in the health cluster, including coursework, credential programs, Health Occupation Student Associations (HOSAs), partnerships, and credit transfer agreements.

Statistical analysis was not merited because of the small *n*; however quantitative analysis included measures of central tendency and separated participant responses by urban and rural districts. In addition to the quantitative questions, the instrument posed open-ended questions about districts' processes and impressions. Themes were identified in the responses, and these were coded and used to facilitate interpretation of the quantitative trends. Further information about each survey topic and the analytical procedures used is provided in the corresponding sections of this report.

Participation

Twenty-seven of Alaska's 54 school districts completed the survey. The student population of the participating districts was tabulated using Alaska Department of Education & Early Development statistics (2013). Though the data represent 50% of Alaskan school districts, their collective responses represent 91% of the Alaskan student body. The significant differences in district sizes as evidenced by the disparity of participation rate to student representation indicates the largest districts in the state all participated (each of the "Big 5" districts completed the instrument) and nonparticipants were rural districts.

Additionally, though 27 surveys were returned, they were not all complete; several districts omitted responses to select questions or entire sections of the survey. Thus as data are reported, the reader should be mindful that they reflect only the data available. Gaps are noted when applicable. The analysis of data throughout this report bifurcates responses from urban and rural districts. The reader should also be mindful that these data reflect less than half of Alaska's rural districts, and it is assumed that non-participating districts have fewer resources and programs than those who responded to the survey. Thus any disparities between urban and rural districts are likely significantly underrepresented, and the state of the rural districts as represented in this report is probably inflated and skewed to those with more developed and robust CP/PoS efforts.

Nonetheless, this study is the first attempt at an inventory of this kind, and is a valuable starting point for ongoing discussions and programming.

Part I – Maturity of career pathway components

The first part of the survey sought to identify districts’ activities around CP/PoS to determine their level of maturity in implementing this new initiative and approach to CTE. A study of this type requires the concept and components of CP/PoS be operationalized and explicit.

Both the Office of Vocational and Adult Education⁴ and the US Department of Labor⁵ have advanced assessment and implementation tools for Programs of Study; key elements from these two instruments were combined and adapted for an Alaskan audience to create a 10-component rubric for assessing the development and maturity of programs of study. These components are⁶:

1. **Legislation & policy** – State and local legislation or administrative policies promote CP development and implementation, and provide commensurate resources for development and sustainability
2. **Shared sustainable leadership** – Collaborative relationships for CP design, implementation and maintenance include local agencies responsible for secondary and postsecondary education, local economic and workforce agencies, business and other community stakeholders
3. **Employer engagement** – State industry groups and local employers engage with education to provide input on curriculum, make available work-based learning opportunities, and contribute to industry-based learning outcomes
4. **Professional development** – Professional development opportunities support the design, implementation, and maintenance of CP, foster innovative teaching and learning strategies, and are available for administrators, teachers, faculty, and other education professionals
5. **Teaching & learning strategies** – Innovative and creative instructional approaches enable teachers to integrate academic and technical instruction
6. **Aligned secondary & post-secondary curriculum** – Secondary and postsecondary courses are sequenced so students do not duplicate coursework
7. **Credit transfer agreements** – Formal agreements between secondary and postsecondary systems allow students to earn transcribed postsecondary credit

⁴ Office of Vocational and Adult Education, *State Technical Assistance Academy Programs of Study: Self Assessment Tool*, <http://cte.ed.gov/file/State%20Technical%20Assistance%20Academy%20Programs%20of%20Study%20Self%20Assessment%20Tool.pdf>

⁵ US Department of Labor, *Career Pathways Toolkit: Six Key Elements for Success*, <http://www.workforceinfodb.org/PDF/CareerPathwaysToolkit2011.pdf>

⁶ Phrasing appearing in this document differs slightly from the verbiage appearing in the survey instrument and descriptions have been truncated.

8. **Academic/technical skills, standards, and assessment** – Content standards are clearly defined and assessments are used to ensure students meet them
9. **Guidance counseling & advising** – A guidance counseling and academic advisement system helps students plan for their careers by mapping a complete sequence of coursework that ensures secondary graduation and preparation for a postsecondary training/education program
10. **Accountability & evaluation systems** – Evaluations measure both the structure of the career pathway and its intended outcomes; data are reviewed and used to facilitate decision-making and planning

Respondents identified their most well developed career pathway of program of study (CP/PoS) and rated their level of maturity on each component using a 3-point Lickert scale indicating:

- Level I – Awareness
- Level II – Transition
- Level III – Implemented

Each rating was operationally defined for the component, and districts had the option of saying they had no plan to implement any given component.

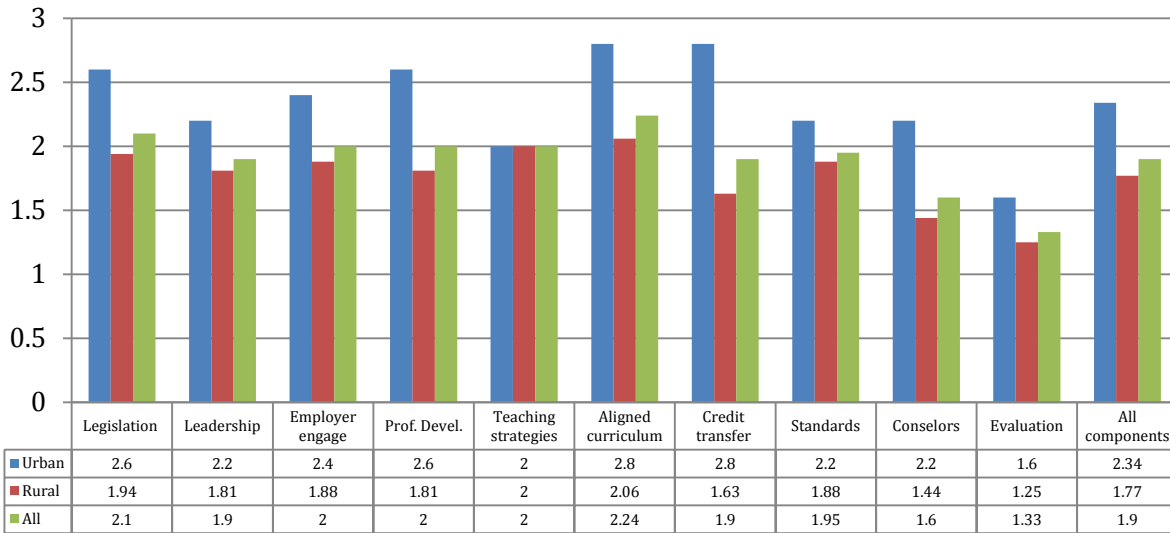
Findings

This section has data from 21 districts, including all of the “Big 5.” Figure 1 presents an overview of average scores on each of the 10 measured components, and illustrates that some components are significantly more developed than others. Differences are to be expected; it is a better understanding of the nuances of these differences that facilitates effective programming and outreach.

Raw scores

A striking finding represented in Figure 1 is the difference in reported scores for urban and rural districts. In every area, with the exception of *Teaching & learning strategies*, urban districts rated their level of maturity significantly higher than their rural counterparts. The largest disparity was in the area of *Credit transfer agreements*, followed by *Aligned secondary & postsecondary curriculum*. These two components complement one another in practice, and urban districts rated them at the same level of maturity. It is interesting, however, that in rural districts, *Credit transfer agreements* were nearly a half-point lower in rating than *Aligned secondary & postsecondary curriculum*. As curriculum alignment is presumably done for the express purpose of transferability, the reasons for this gap warrant exploration.

Figure 1
Maturity of CP/PoS Components



Districts rated their level of maturity on 10 different components of CP/PoS development and implementation. Some areas are better developed than others, and urban districts consistently scored their level of performance as higher than rural districts.

Other areas of significant urban and rural disparity include *Guidance counseling & advising* and *Legislation & policy*. *Guidance counseling & advising* will be discussed later in this document, but the disparities in *Legislation & policy* is an interesting finding. Though all districts are under the same state and federal mandates, this component also considered local legislation and policies. The difference in scores suggests that such local policies are at a markedly different level of development than in urban districts, or that broad state and federal policies are less useful or applicable in smaller districts.

Though urban districts consistently scored themselves higher than rural districts, it is interesting that they rated their *Teaching & learning strategies* as the same. This may be because state licensing and Teacher Education Programs prepare all certified teachers with instructional and pedagogical strategies to support classroom learning. However, rural districts consistently cited lack of qualified teaching staff as a hurdle or barrier to implementing CP/PoS (see *Implications* section of this report for additional discussion). A large number of teachers in rural Alaska are certified for their academic and pedagogical background, and CTE content is added to their schedule as an ancillary responsibility for which they do not have formal training or preparation (see Donnelly, 2013). Conversely, research has documented that many CTE teachers in rural areas operate on Type M⁷ or

⁷ For an overview of the guidelines for Type M Certification, visit the Alaska Department of Education & Early Development Division of Teaching & Learning Support; *Teacher Certification – Type M Limited Certificate*; <http://www.eed.state.ak.us/teachercertification/typeM.html>

other alternate certifications (meaning they are hired for their content expertise but do not have commensurate pedagogical training for teacher certification (see Center for Alaskan Policy & Educational Research, 2014; Donnelly, 2013), thus this finding is curious.

The importance of noting the difference in reported maturity has implications for programming. Where a large disparity exists, the data suggests that approaches and outreach to rural districts may need to take a different shape and form than urban districts.

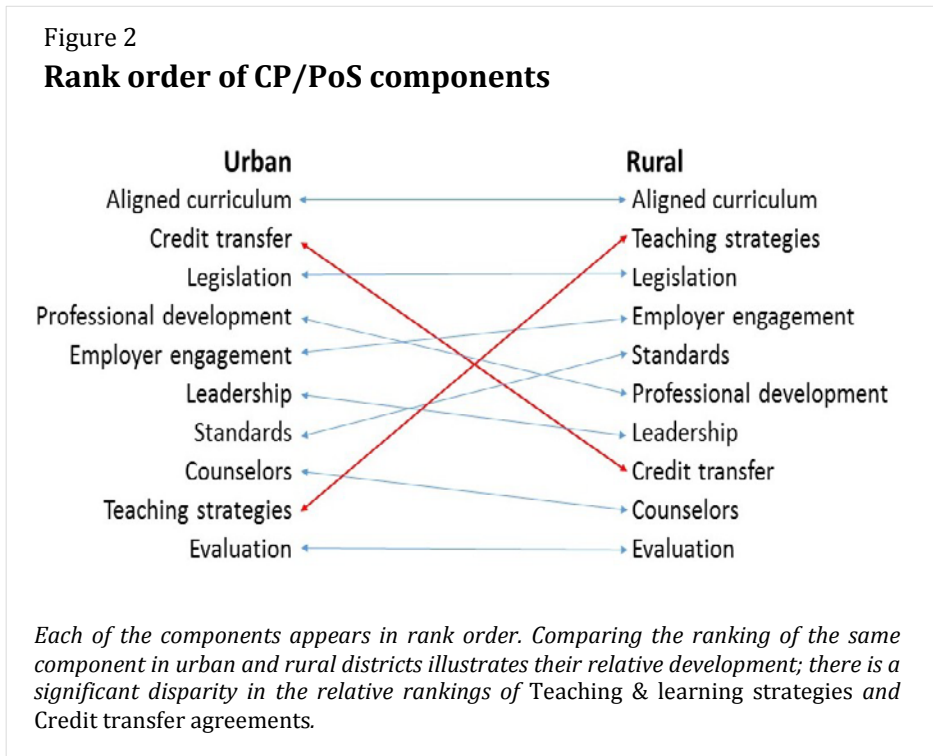
Rank order

In addition to a direct score comparison, the analysis also considered the rank order of maturity on the components, and this is presented in Figure 2. For both urban and rural districts, *Aligned secondary & post-secondary curriculum* was scored highest; conversely *Accountability & evaluation systems* was identified as the least developed component. Both types of districts also rated *Guidance counseling & advising* as low.

The relative ranking of the other components provides additional insight and context. Though both types of districts scored *Teaching & learning strategies* at a level of 2 (Transition), this was the second highest component for the rural districts, and the second lowest for the urban districts. The difference in ranking of *Credit transfer agreements* (highest for urban and third lowest for rural) is also interesting, especially because

Aligned secondary and post-secondary curriculum was the most highly rated component for both types of districts.

The use of comparative rank order facilitates the identification of statewide needs and needs that are more specific to district characteristics; this can facilitate outreach and technical assistance planning. For example, it seems that all districts may benefit from support or technical assistance



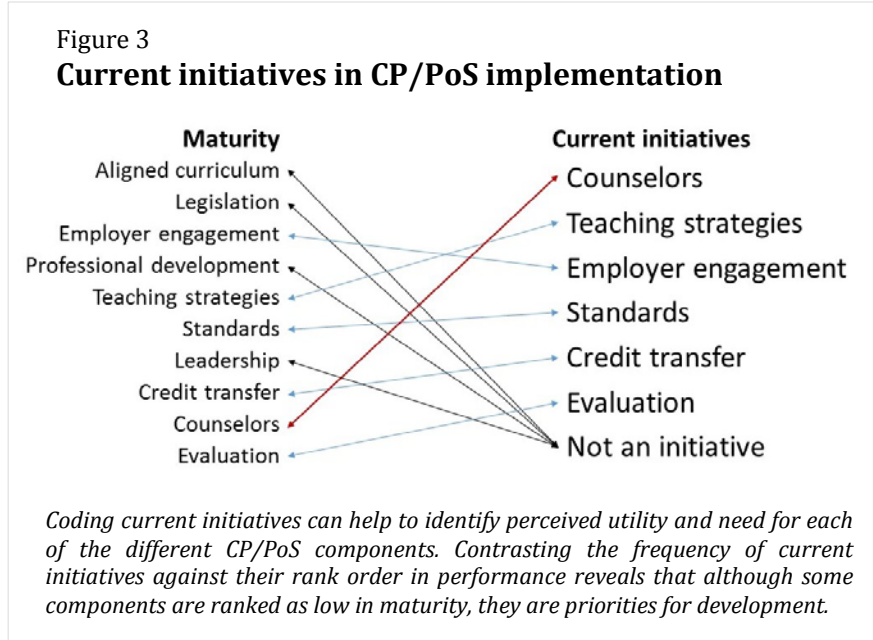
around *Accountability & evaluation systems*. Conversely, urban districts may view support for *Teaching & learning strategies* as a higher priority for improvement than rural districts.

Current initiatives

It is worth noting that all responding districts provided ratings for components 1-3. For 4-10, at least one rural district indicated that it had no plans for implementation. It would be valuable to explore whether these components are less valued, or whether their implementation is perceived to be more difficult or cost-intensive.

Knowing where districts spend their finite resources is one way to identify value and perceived utility. The qualitative analysis provided some opportunity to contextualize current efforts within the 10-component framework. Though districts were not explicitly asked about current initiatives, 16 districts provided such information in their free responses. The majority of free responses indicated a focus on developing new programs or making existing programs more robust, and did not specify the process. However, when specific approaches were identified in the narrative responses, they were isolated and coded in the 10-component framework. Figure 3 presents the rank-order of current efforts to develop CP/PoS, contrasted with the rank-order of self-reported performance.

The area receiving most attention was *Guidance counseling & advising*; 5 districts indicated they were actively working on integrating career planning into their instructional or guidance curriculum. As this component ranked low in the self-ratings, it is encouraging to see that districts are working on developing more robust career guidance initiatives. Figure 3 also demonstrates that *Employer engagement*, and *Teaching & learning strategies*, ranked third and fifth, respectively, in order of maturity, are a current priorities for districts. However, there was little mention of developing *Assessment & evaluation systems*, the lowest ranked component. No districts mentioned they were working on *Legislation & policy*, *Shared sustainable leadership*, *Professional development*, or *Aligned secondary & post-secondary curriculum* in their current initiatives.



This identification of current initiatives provides some guidance for entities seeking to provide support. These seem to represent districts' priorities in the development of CP/PoS, and may represent the specific areas where technical assistance would be most timely and applicable.

Discussion

The definition of CP/PoS as operationalized by the instrument and the districts' self-ratings provides valuable insight to statewide opportunities. It is important to remember that the representation of a CP/PoS with infrastructure in 10 distinct components may have been a new concept for many districts, as this framework had not been circulated as an aspirational model at the statewide level. The exercise of self-rating may have spurred districts to consider new elements of CP/PoS planning, and a follow-up study could identify whether or not the survey process itself was an instructional activity. As the responses did not express any reservations or disagreements with the components of the rubric itself, it seems that the framework has some inertia and may be appropriate for subsequent studies and statewide metrics.

Though an urban-rural gap in the development of CP/PoS could have been anticipated, this study identified where these gaps are largest, and where performance is similar. These data suggest that in some areas need is universal, so outreach and technical assistance might utilize the same strategies and approaches, but in other areas, needs are tied to district characteristics, and support will need to be differentiated accordingly.

The districts' self-ratings represent their current level of engagement in their most developed CP/PoS. Some of the components appear to be broadly applicable to all CP/PoS within a given district (e.g., *Guidance counseling & advising* and *Legislation & policy*), and it is likely that students in a given district have similar experiences. Conversely, other components are quite specific at the Pathway level (e.g., *Employer engagement* and *Aligned secondary & postsecondary curriculum*). For these components, student experiences within a single district could be quite variable depending on the pathway. Programming and outreach should consider which elements span clusters, meaning that foundations are in place and can be used for the development of new CP/PoS, and which must be developed anew for each CP/PoS.

The instrument did not ask districts to specify what factors contributed to the development of their most mature CP/PoS, and this is an opportunity for follow-up. Though CP/PoS are, by definition, partnerships, knowing whether these successes can be attributed to engaged community or industry partners, an economic need, or an enthusiastic teacher is important to identifying best practices. Understanding what contributed to the development of quality CP/PoS will help districts and leaders to transfer skills and successes from one CP/PoS to another. Districts were also not asked directly to explain variable performance between different components, and it would be valuable to do additional research to better understand the reason for the disparity. Understanding whether differences in performance can be attributed to cost, a lack of skills or human resources necessary to do the work, differences in perceived utility or value, or another factor is an important first step in removing barriers to their implementation.

Statewide, districts indicated they were most developed in the area of *Aligned secondary & postsecondary curriculum*. An interesting finding was that urban districts reported they were performing equally well in the areas of *Aligned secondary & postsecondary curriculum* and *Credit transfer agreements*. As transferability is the primary reason to align curriculum, parallel performance in these two areas is intuitive and appropriate. However the disparity between aligned curriculum and credit transfer in the rural districts is an interesting finding, and merits follow-up.

Districts reported the lowest level of maturity in the area of *Accountability & evaluation systems*. Districts will need incentive and support to prioritize this amongst other immediate and pressing needs. As quality data are important in strategic decision-making, advocacy, funding, and policy development, this component is a significant area of opportunity for the state of Alaska. Recent legislation has made some provisions for assessment and credit alignment, but these mandates will need to be operationalized and expanded to provide adequate data to subsequently inform programming (Gurantz & Borsato, 2012).

Part II – Available PoS within the career clusters

In the first part of the survey, the districts rated their CP/PoS activities based on their most developed program. Per their estimation, the most developed programs throughout the state of Alaska are *Architecture & Construction* (in rural districts) and *Health Science* (in urban districts). In the second section of the survey, districts were asked to report an inventory of courses and career pathways available to students. This section of the report looks at the availability of CP/PoS across the state of Alaska, regardless of the relative maturity of their components, and documents the opportunities available to students throughout the state.

Method

Participants’ responses included listings of courses and PoS within each of the 16 national career clusters, which were checked for congruence and tallied in the analysis. General education courses (e.g., “Applied Math” or “Advanced Science”) were removed from the course tallies; however integrated academics (e.g., “Math in Health Care”) are included in the analysis. This section of analysis includes data as reported from 26 districts, and four of the “Big 5” urban districts.

Figure 4
Districts offering PoS(s) by cluster

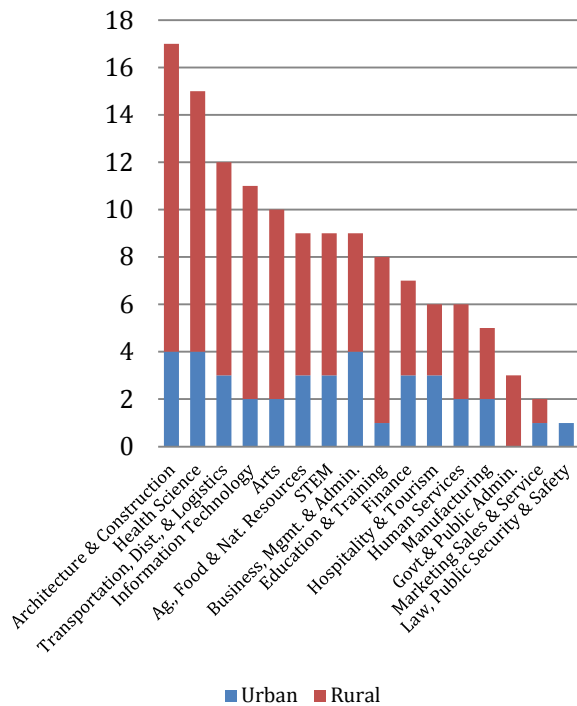
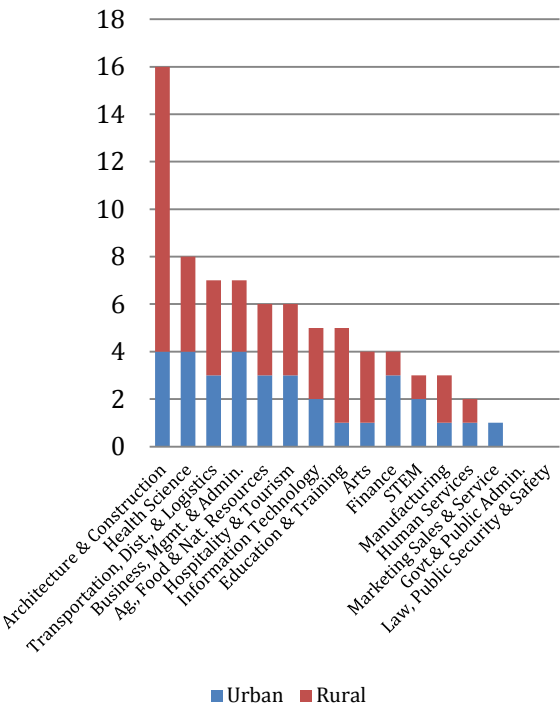


Figure 5
Districts offering PoS(s) by cluster



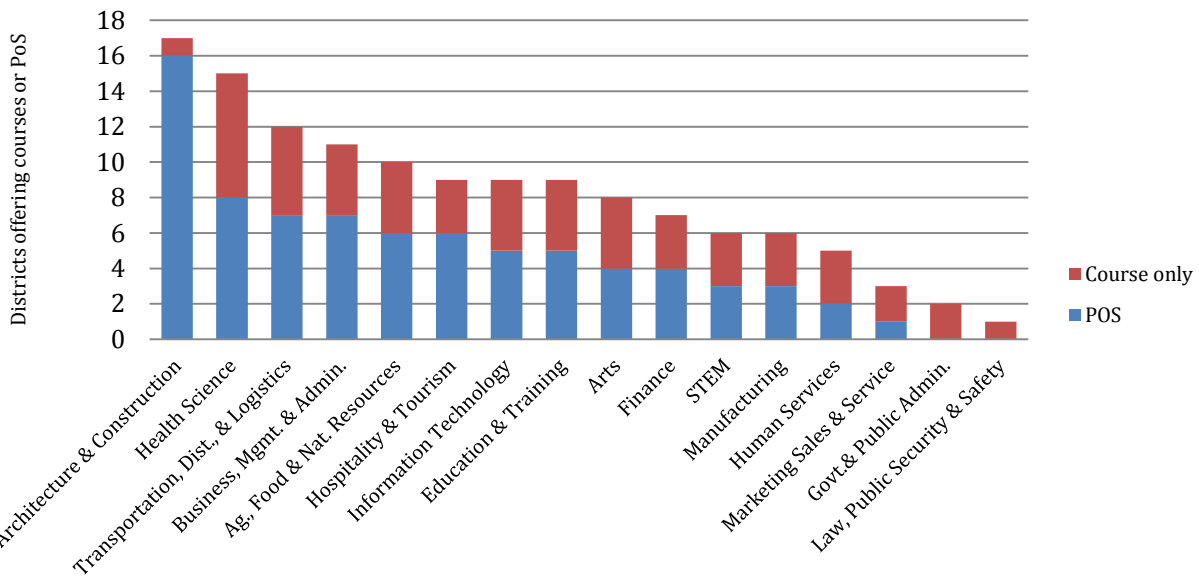
Though urban districts comprise 15% of the respondents, they offer 55% of courses and 56% of available PoS. As these data do not include 28 of the 49 rural districts and are missing data from one of the “Big 5” districts, the disparity of course offerings is likely significantly understated in these depictions.

The available data demonstrate that the most widely available courses and PoS are in *Architecture & Construction, Health Science, and Transportation, Distribution & Logistics*, and the least available are *Law, Public Security & Safety; Government & Public Administration; and Marketing, Sales & Service*. Figure 4 provides an overview of districts offering courses in each of the clusters, and Figure 5 depicts their respective PoS.

An interesting finding in the tabulation of available pathways is found in the juxtaposition of urban and rural availability. As Figure 4 illustrates, though urban districts comprise 15% of respondents, they offer 55% of unique CTE courses available to students throughout the state. Fifty-six percent of the career pathways statewide are available in large districts, indicating that CTE courses are more likely to be integrated into a career pathway (rather than standalone courses) in larger districts. As these data do not include all of the “Big 5” districts and represent only 29 of the 49 rural districts in the state, it is reasonable to assume that these differences are more pronounced than represented by the data collected in this study.

The ratio of courses to PoS is also an interesting finding. Ideally in the CP model, courses would be offered within a PoS, rather than as standalone offerings. Figure 6 depicts the number of districts offering PoS to standalone courses.

Figure 6
Course to PoS ratio



Though all courses would ideally be integrated into a PoS, with the exception of Architecture & Construction, it appears that districts offer standalone courses about half of the time. Courses are offered outside of a PoS more frequently in rural districts.

As Figure 6 notes, in the area of *Architecture & Construction*, almost all districts offering courses have integrated them into PoS. However, this finding is unique to that cluster, and in all others, courses are matched with corresponding PoS about half of the time. The successes of *Architecture & Construction* can likely be attributed to the development of construction academies throughout the state of Alaska. Exploring the strategies and resources employed to expand *Architecture & Construction* programs into robust PoS may be a valuable case study for other clusters to emulate.

Discussion

As readers of this report simultaneously consider the findings of Part I and ponder which components of the CP to develop, the conversation must also consider which clusters and programs to expand. Clusters currently offering a large number of courses outside of corresponding PoS seem poised for development. If the curriculum and coursework are in place, leaders in the state and in individual districts may wish to consider developing the aspects of CP that require inputs beyond the curriculum.

The disparity between urban and rural districts observed in part I is scaled in this section of the analysis, where the impact on students (in choices and course offerings) is quantified. Both the number of options and maturity of CP/PoS are significantly lower in rural districts. These two components of the study, taken together, suggest that the state of Alaska has an opportunity to expand not only the variety of courses available in rural districts, but to also invest in helping rural districts to develop the 10 quality components of these programs. Though the 5 urban districts do serve the majority of Alaska's students, nearly 28% of Alaska's students live and attend schools in districts classified as rural (Alaska Department of Education & Early Development, 2013), and innovative approaches to career planning and programming in these areas has the potential for significant statewide impact.

Part III - Career planning

A foundational element of CP/PoS is individualized student planning as they explore both themselves and careers that align with their goals, aptitudes, interests, and values (Hughes & Karp, 2004). This process involves more than simply choosing the right courses (Peterson, Long & Billups, 1999), and should be operationalized in a Personal Learning and Career Plan (PLCP), which helps students to connect and plan academic experiences, coursework, self-exploration, mentorship, work-based learning, and extra-curricular activities. The PLCP is intended as the cornerstone of CP/PoS activities.

Twenty-six districts provided information about their career exploration and planning activities. Forty-two percent of responding districts indicated that they support PLCPs for all students; 15% indicated that they have no current PLCP activities. Forty-three percent of districts indicated that they are implementing PLCPs for “some students,” but the survey did not ask districts to specify what criteria are used to determine which students receive this support. Better understanding which student populations or programs integrate PLCPs is an opportunity for further study.

Twenty-one districts (81% of respondents) indicated that they are using the electronic *Alaska Career Information System* (AKCIS)⁸; this appears to be the most widespread tool used for PLCP activities in the state of Alaska. About half of the districts are supplementing the AKCIS program with hard-copy documents. A few districts are employing additional interest inventories and commercial career exploration instruments, as well as career exploration and employability courses. Free responses indicated that, generally, districts are seeking to make the PLCP a universal requirement starting in the middle grades.

Discussion

Though the state of Alaska is making strides in career planning and exploration, it is not universally available to all students in all districts. As the PLCP is intended to be central to CP/PoS activities, all forward progress and enthusiasm are positive, but the survey’s findings of widespread availability of CTE courses and CP/PoS (as identified in Part II) juxtaposed with limited PLCP availability (discussed in this section) and a shortage of guidance counseling and advising (as noted in Part I) is troubling. As Makela (2006) notes,

Students can make the best, most committed decisions to their education only when they clearly understand what milestones they need to reach. The bottom line is getting students to take a more active, engaged, and intentional role in their own academic and career choices. (p. 5)

⁸ State of Alaska Commission on Postsecondary Education, https://acpe.alaska.gov/STUDENT-PARENT/College_Career/AKCIS

In order for students to participate effectively in career pathways, they need information about their options and responsibilities, and help to operationalize their goals into informed choices and activities (Hughes & Karp, 2006).

The districts reported guidance counseling and advising as a key initiative (see figure 3), and the *2010 State of Alaska Career and Technical Education Plan* prioritized PLCPs for all students; this attention should facilitate the attainment and development of PLCPs throughout the state. However, districts also say that the funding for and retention of qualified staff including guidance counselors is one of their greatest barriers to more fully implementing the CP/PoS model (elaborated in the *Implications* section of this report). In addition to essential student support, guidance counselors are also key resources for parents in helping their children to plan for college (Tornatzky, Cutler & Lee, 2002). As effective information and guidance counseling are critical to helping students plan for their futures (Longwell-Grice, 2003; Lum, 2008; Makela, 2006; Oldfield, 2007; Rennie Center for Education Research & Policy, 2011; Shalcross, 2013), support for addressing these challenges is an area of opportunity for the state.

Knowing that AKCIS is the most popular mechanism for PLCP planning, as the state seeks to expand and improve upon its current efforts, there is an opportunity to explore its utility and limitations. Outreach activities should build upon this tools' popularity and strengths.

Questions around career planning and exploration constituted only a small component of the study, and the data generate many follow-up questions. More study is warranted and recommended around career exploration and planning in general and the PLCP in particular.

Part IV – Health

The fourth and final section of the survey asked districts to report on their health pathways, and the data have value not only for documenting activities in the cluster, but also for illustrating approaches that districts are taking to develop their CP/PoS. Unfortunately, data in this section of the instrument were weak. Twenty-seven districts provided data in this section, of which 16 reported that they offer courses in the health cluster. Data from 12 districts (4 urban and 8 rural) offering health CP/PoS are included in the analysis; the other 4 districts with health CP/PoS did not complete this section of the survey. Thus there is need for further study to complete this inventory; nonetheless the data gathered appear to represent much of the health curriculum available in the state, and merit some baseline analysis.

Health courses

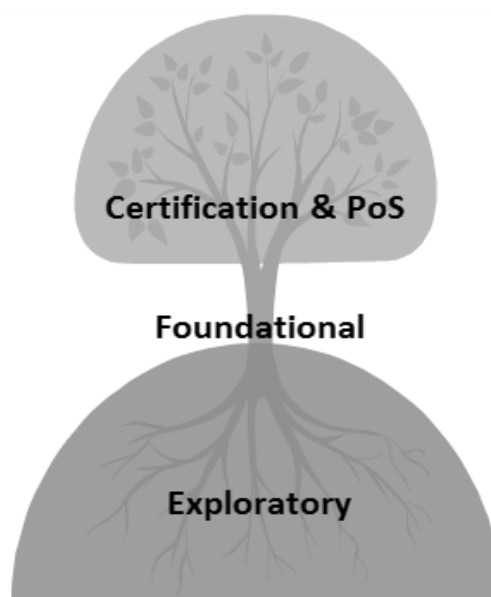
Data included a listing of courses offered in each district. For analysis, the titles were looked up in the respective catalogs and course descriptions were used to code them by type:

- **Exploratory courses** – courses aimed at career exploration within the health cluster
- **Foundational courses** - broadly applicable courses that give students base knowledge widely applicable in the health fields
- **PoS courses** – courses emphasizing a specific specialization or skill not readily transferrable to another PoS
- **Certification courses** – courses which result in or leave student prepared for external examination that leads to a certification

The objective with CP/PoS and the PLCP is for students to hone their interests in a process of introspection and career exploration. Figure 7 uses a tree schematic to illustrate how career exploration results in the identification of appropriate career clusters, where students can take broadly applicable foundational courses, and

subsequently branch into focused programs of study as they solidify their interests and goals. The literature suggests that some of the basic exploration should start in the middle grades (Arrington, 2000; Hughes & Karp, 2004; Peterson et. al, 1999; Ting, Leung, Stewart, Smith, Roberts & Dees, 2012), and that PoS courses should be reserved for the 11th and 12th grades when students have

Figure 7
Career pathway course types



The tree schematic represents the coursework in career pathways. Students begin at the roots, exploring themselves and the career options that would match their interests and aptitudes. As they focus their interests, they take foundational courses, which serve as the trunk of their knowledge base. From foundational courses, students branch into more focused PoS courses which lead them to specific careers, where they can bloom and thrive.

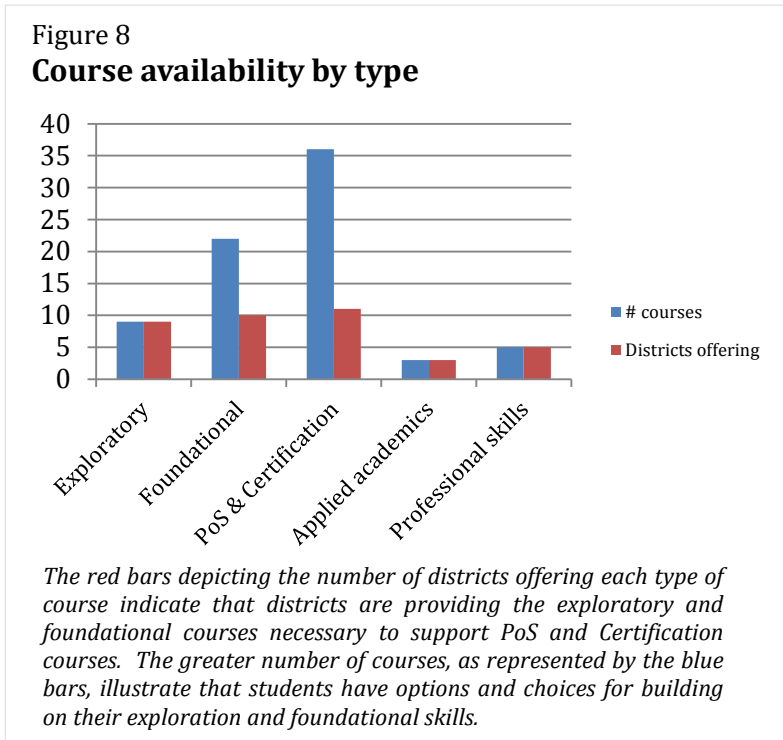
developed some salience of their aptitudes and interests concomitant with greater awareness of their career options, as developed through foundational courses (Kosine & Lewis, 2008). Along with their career courses, students should engage in rigorous academics (Lewis, 2008; Stone, cited in Offenstein et. al, 2009), and these concepts should be integrated into their CTE courses, where students have the opportunity to see the relevance of the concepts as they are applied. In this vein, two additional categories of courses were noted in the analysis:

- **Applied academics** – courses focused on academic concepts as they are applied to the cluster
- **Professional skills** – courses focused on the development of soft skills (often termed “employability skills”) for the workforce in the career cluster

These courses differ from foundational skills in their focus; their primary objective is not the development of health knowledge, rather health is used as a context for other information and skills, and thusly these classes were coded separately.

Following the CP model, PoS and Certification courses should be offered after the exploratory and foundational courses that prepare students with the self and foundational knowledge necessary for success and persistence. The data reported by districts in Alaska suggest that this type of course sequencing is happening in the health cluster. Figure 8 gives an overview of the number of courses in each category, as well as the number of districts offering them.

For the most part, districts that offer PoS and Certification courses are also providing appropriate exploratory and foundational courses. Some districts are augmenting their CP/PoS by offering applied academics and professional skills courses. Though the instrument did not ask about course sequencing, it is assumed that students progress through the path as recommended, developing a commitment to and working understanding of the pathway along with the skills specific to the discipline.



An interesting finding is that districts do not seem to offer exploratory or foundational courses unless they offer a Certification or PoS course in the health cluster. Though PoS courses should not

be offered without the exploratory and foundational prerequisites, it is appropriate for districts to offer just exploratory and foundational courses. If students do not engage in these exploratory opportunities at the secondary level, they are less likely to develop awareness of postsecondary options (Arrington, 2000). As career exploration is essential to engaging students, further research is recommended to determine how health is covered in the more broad career exploration curriculum, how well it engages students’ interests in the cluster, and how the courses are expanded upon in PLCPs and coursework in districts not offering CP/PoS in health.

Certifications

Of the 27 respondents, 14 (52%) indicated that they offer industry certifications as part of the high school curriculum. This section of the survey instrument had many incomplete responses, rendering in-depth analysis inappropriate. Rather, Table 1 provides a listing of certifications and the number of districts offering them. The list is neither complete nor exhaustive, and a follow-up study to develop a complete inventory of the availability of these certifications is warranted.

Despite some reliability concerns for the data, Table 1 provides a preliminary listing of certifications that students can earn. This list suggests that a lot of Alaska’s youth have the

opportunity to leave high school with health certifications that prepare them for entry-level positions. Additionally, 13 districts reported that they offer certifications in First Aid and/or CPR. Though these are key foundational competencies for many health professions and also equip students with useful life skills, these certifications alone are insufficient to qualify students for entry-level positions.

Table 1
Preliminary list of secondary health certifications

Certification	Districts offering
Emergency Trauma Technician	7
Emergency Medical Technician	6
Certified Nurse’s Assistant	4
Personal Care Assistant	2
Certified Pharmacy Technician	1
Emergency Telecommunications Certification	1
Red Card Certification	1

Though the survey did not yield complete data from all districts, Table 1 provides a preliminary listing of health certifications available to secondary students in the state of Alaska, and the number of districts reporting to offer them.

Health Occupations Students of America (HOSA) chapters & industry partnerships

Though the survey solicited feedback about Health Occupations Students of America (HOSA) and industry partnerships, response rates and data quality for this section were poor. This may be attributable to survey fatigue (the questions appeared on the final page an 8-page instrument), but

is more likely due to the nature of information requested. The bulk of the survey solicited catalog data or general information about program operations. Information about the number of students participating in a HOSA and specific industry partnerships would likely come from a different information source, and thus the respondents typically skipped the questions.

Though the survey did not generate adequate data to represent the extent or nature of HOSAs or health industry partnerships in the state of Alaska, these entities play a critical role in the implementation and success of CP/PoS (Hughes & Karp, 2006; Folkers et. al, 2012). More research is needed to better inventory baseline activities, and it should also seek to identify best practices and strategies for promoting and engaging these partnerships.

Discussion

Because incomplete data characterizes this section of the report, it is not prudent to extrapolate about the overall status of health CP/PoS in Alaska. Comprehensive data around the availability of health courses, health PoS, and career planning for the health clusters are maintained by the *Alaska Center for Rural Health's Education Center (AHEC)*⁹. The data presented in this report seem to align with these statewide inventories, and it is recommended that future studies in the health cluster build on existing data from AHEC.

The data do indicate an opportunity to expand the availability of health pathways, starting with developing exploratory and foundational courses that are broadly applicable and deliverable. As a CP/PoS, health offers the gamut of exploratory to Certification and PoS courses, and where these pathways are offered, there seems to be adequate balance and support. However, only 16 districts responding to the survey indicated that they do anything in health. Of those 16, nine are offering exploratory courses in this cluster, and 10 offer foundational classes. If health is a priority for the state, expanding exploratory courses is an area of opportunity, and may lend itself better to distance delivery than some of the clinical or PoS courses.

Where health is offered, Alaskan students have the opportunity to earn a fair number of certifications. The data reflect that the PoS are for Associate degree or certificate tracks, with less focus on preparing students for professional degrees. Though students with such aspirations may take a traditional college preparatory or academic track, CP/PoS are intended to serve all students, and it would be valuable to explore how pathways can be designed to engage all career aspirations in a given cluster.

Expansion and exploration of CP/PoS requires solid industry partnerships. As the survey did not render adequate data around the strength and breadth of these essential partnerships, but they are

⁹Alaska Health Education Center, Alaska's Area Health Education Center, <http://www.uaa.alaska.edu/acrh-ahec/>

known to be indispensable to effectively facilitating transitions (Folkers et. al, 2012; Nunley, Shartle-Galotto & Smith, 2000), follow-up study is warranted.

Implications

Though the respondents indicated support for CTE and recognized its benefits for students, their responses centered around one central theme: resource availability. The qualitative analysis sought to categorize responses as strengths to be built upon, current momentum to bolster and celebrate, and resources that are limiting CTE programming. Figure 9 provides an overview of these findings.

Existing resources

The districts' responses indicated a great deal of energy and positivity around providing opportunities for Alaska's youth, and for CP/PoS as a framework for supporting both students and the state of Alaska. These existing resources provide a solid foundation for future planning.

Enthusiasm

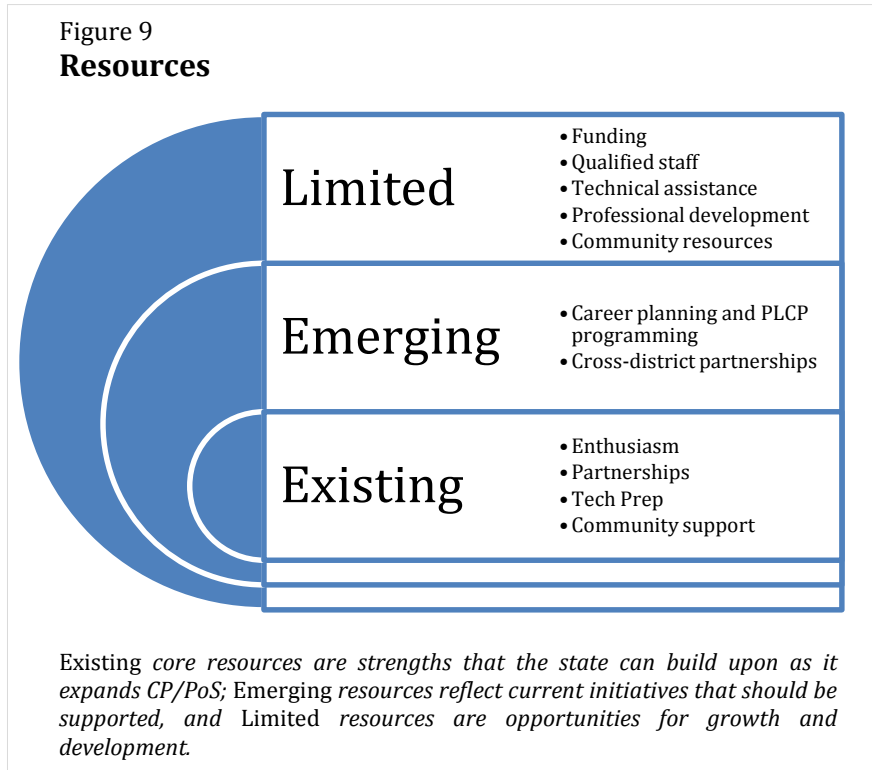
The districts that responded to the survey were enthusiastic about CP and PoS. Methodologists caution that self-selecting populations are not representative of the whole

(Huck, 2008), and taking the time to voluntarily complete an 8-page instrument is itself indicative of value and commitment. The responses themselves, however, truly reflect an appreciation for Career Pathways and CTE. Urban and rural districts alike value what it does for students and their communities.

Partnerships

Though the health-specific portion of the survey did not yield adequate data about partnerships, the first part of the survey and the participants' comments reflect the strength of partnerships and their role in shaping CP/PoS throughout Alaska. Districts talked about partnerships with local employers, with state and federal agencies, and with one another.

An interesting finding of the qualitative analysis was that the structure of partnership agreements varies by district type. Whereas urban districts have pulled their partners together in a formal structure (e.g., advisory boards), rural districts seem to do more individualized planning with



community partners. Though districts approach this in different ways, the value they attribute to their partnerships is a strength for CP/PoS implementation.

Tech Prep

Tech Prep was prominently mentioned throughout the survey, related to aligned curriculum and credit transfer (part I), career clusters (part II), health (part III), and in the free responses. Districts throughout the state of Alaska have strong Tech Prep partnerships and are proud of their ability to offer articulated courses. As the state seeks to expand CP/PoS, Tech Prep should be acknowledged and built upon.

The CP model suggests that articulated credit is a final component; before students are ready for articulated credit they must engage in the academic, exploratory, and foundational work to develop knowledge of careers and salience of their commitment. It appears that the Tech Prep agreements are the evidence or fruits of solid partnerships, advising, and student work; though these activities are happening, Tech Prep is the highly visible and celebrated component. Part I of the instrument, however, identified an opportunity to flesh out other aspects of CP/PoS and make them more robust. Tech Prep has an important role to play as a strategy, rather than a goal, of program implementation.

Community support

Several districts noted that their local communities value and support their CTE programming. This finding is intuitive: communities care about their young people and about the health and strength of their communities and economies, thus there is good reason for them to support CP. The engagement and support of communities was more prominently mentioned in the free responses from urban districts; this is not to say that it is missing in rural districts – as the free responses did not ask about community engagement directly, it cannot be assumed that a lack of mention reflects a dearth of the resource. However, understanding what community engagement looks like in different parts of Alaska is a valuable opportunity for follow-up. Because interest and support for CP is strong in the communities, it would be helpful to better understand these dynamics so that their enthusiasm could be harnessed and used productively.

Emerging resources

The districts also identified resources that have some support now, and leaders in CP/PoS have an opportunity to build on their momentum. As agencies and programs seek to do outreach and technical assistance, districts seem to be primed for additional support in these areas.

Career planning and PLCP programming

Districts generally indicated that they would like to make PLCP a universal requirement starting in the middle grades, but they need additional support to actualize this goal. The literature notes that, nationwide, the student to counselor ratio exceeds recommended proportions, counselor workloads often contain additional administrative duties that detract from student contact (Stephan & Rosenbaum, 2010); these challenges are greatly intensified in rural Alaska. Part I of the

survey identified guidance counseling and advising as one of the weakest components of CP/PoS, but it was also identified as the area receiving the most focused effort and attention. Supporting districts in their efforts to develop their advising capacity is likely to result in increased career planning and PLCP development. AKCIS was mentioned prominently as a leading tool for this initiative, as well as the use of career planning/exploration and employability courses. It would be valuable to further explore the role of AKCIS and other tools for expanding and supporting districts' efforts.

Partnerships as a mechanism for combating limited resources

With their limited resources and challenges associated with remoteness, small districts see cross-district partnerships as an opportunity to pool resources and offer students more choices, as well as to learn from one another. Districts have voiced their interest and commitment, and are requesting technical assistance in these processes. When state industry and educational leaders seek to expand CP/PoS, it would be appropriate to consider engaging rural districts together – rather than individually – to reach out to as many students as possible. As research has demonstrated the potential for success in distance CTE courses (Moore & Shulock, cited in Offenstein, 2009), and nearly a third of students currently take online courses as part of their postsecondary experience (Allen & Seaman, 2013) this strategy might have the added benefit of role rehearsal (Karp & Bork, 2012). Consideration of innovative delivery models and partnerships further aligns with *Alaska's Career and Technical Education Plan*.

Limited resources

Lacking resources were cited as the biggest limiting factor in the establishment and development of CP/PoS. Understanding these needs, and particularly how they differ in districts throughout the state of Alaska, is an important first step to filling gaps.

Funding

Funding is a limiting factor for any program, and CP/PoS is no exception, in urban or rural districts. The centrality of Perkins funding was prominent in the data; it is clear from both district comments and Department of Education and Early Development data that if Perkins funding dissipated, the state of Alaska would have difficulty implementing its CTE curriculum. Rural districts also noted that small Perkins allocations are inadequate to secure the personnel and resources necessary to fully develop or implement these initiatives. However, the districts' comments also reveal a need for advocacy around the costs and benefits of the CTE curriculum to state leaders and policy makers.

CTE programs are expensive not only to initiate as they generally necessitate large capital investments, but they are also costly to maintain and sustain. Infrastructure development and maintenance, including frequent equipment upgrades, are expensive but necessary to keep programs relevant. Ongoing professional development for staff to accompany these infrastructure costs is another struggle for districts. The differential costs for CTE programming need to be communicated and advocated.

Qualified staff

The lack of qualified staff has two strands: recruitment and retention. This challenge was cited primarily, but not exclusively, in rural districts. Though the reasons for these challenges and the responsive and proactive strategies for ameliorating this concern are likely to vary by district characteristics, this is an endemic problem in Alaska, and is noted as a threat to CTE programs in particular in the *State of Alaska Career & Technical Education Plan*. Average teacher turnover rates in rural school districts vary tremendously, from a low of 7% to a high of 52%; 10 out of 53 have turnover rates over 30%, and as a whole rural districts average 20% turnover per year (Hill & Hirshberg, 2013). A myriad of studies have explored reasons for this phenomenon (Chesbro, Dobnson, Gruenig, Hill, Hirshberg, Lo & Morotti, 2012; Donnelly, 2006; Hill & Hirshberg, 2006; Hill & Hirshberg, 2013); this study is not advancing new findings in this area nor revealing any new strategies. Rather, it lends support to those observed trends and shows that the implementation of CP/PoS will be limited to and hindered by the availability of qualified staff.

Technical assistance and professional development

The request for technical assistance was a theme noted exclusively by small districts. Though these data do not suggest that urban districts are not receptive to this support, rural districts made some specific requests. A theme in the responses from small districts was that professional development opportunities are not meaningful to them, and after paying for these costly opportunities, they frequently failed to see a proportionate return on their investment. Small districts indicated they want good professional development that will give them the resources and tools to implement CP/PoS, and they want that professional development to have a specific and applicable rural focus. These comments suggest an opportunity to develop professional development and technical assistance in a differentiated capacity to increase its utility. Part I of this study provides information about which components of CP/PoS vary most significantly by district type, and may be useful in strategically planning these activities.

Community resources

Opportunities for work-based learning and employment were also noted as lacking in the small districts. Several districts stated that students had to physically leave their communities, either in the form of extended field trips or boarding schools, to get work-based experience. The districts further noted that when students earn various CTE certifications, they have limited local employment opportunities where they can utilize their skills.

The state currently supports schools in any community with at least 10 students; where this threshold is not met, students can opt for home schooling, participate in a correspondence school program, or attend one of three secondary public boarding schools in the state. Since the legislature increased the minimum enrollment from eight to 10, 27 rural Alaska schools have shut down (DeMarban, 2012). There is a further cost to villages when students leave to attend boarding schools or career and technical programs in hub communities and cities. For small schools, under the current school funding formula which adjusts per pupil funding to account for the size of the

school, even if participation does not reduce total enrollment below the 10-student threshold, operating funds are significantly impacted (Hill, 2012).

The movement and migration out of villages for economic opportunities is a much larger social phenomenon, and the responses and proposed solutions vary at their philosophical cores; as leaders and educators in the state of Alaska seek to build out and expand CP/PoS, they must be aware of and responsive to this dynamic and how CP/PoS is perceived to affect this in rural communities.

Limitations

Though the data collection and analysis conformed to established protocols and methodologies and participation rates were fair, all studies present limitations. These include:

Participation & missing data – 27 of the 54 Alaskan school districts participated in the survey, representing 50% of districts and 91% of students in the state. Though this is a stellar response rate for a voluntary survey, it is not adequate for a comprehensive statewide inventory as nonrespondents are likely to differ significantly from participants in the areas studied (Holbrook, Krosnik & Pfent, 2008). Moreover, participating districts tended to skip questions or sections, so the analysis for each section only includes data for the districts who responded to its questions, and this was variable.

Situational threat to external validity – One reason for low participation may be that survey administration coincided with the administration of a Perkins report about CTE programs. Even with the reminder phone calls, it seems some districts were confused about how the two instruments differed, and this may have affected participation.

Internal validity - In any survey instrument, limitations arise due to subjectivity. In this study, validity concerns arise within the instrument itself and in the lack of shared, lucid definitions for CP, PoS, and their constituent components. Data were self-reported by districts, and thus are influenced by bias of interpretation, perception, and misunderstanding. Additionally, some of the districts may have interpreted the questions differently, making the aggregation of data difficult.

Reliability – Though the surveys were sent to superintendents, contact information for survey respondents was not solicited, thus it is unclear who actually completed them, and what their process was. Some districts used a committee, and others were completed by a single person. Whether or not the person or committee was fully aware of all of the CP/PoS efforts in the district affects the quality of the answers they provided.

Currency – as CP is a current statewide initiative and districts indicate that they are actively working to promote these opportunities for students, the quality of the data are also tied to their currency. As more effective instruments are developed, they will need to be repeated periodically in order to ensure up-to-date information.

Nonetheless, this was the first time that a comprehensive inventory of secondary CP/CTE activities has been attempted in the state of Alaska, and there is much to be learned from both the data gathered and the process itself. Despite the study's limitations, this analysis serves as a sound "jumping off place" for future studies and programming.

Recommendations

The data in this study yielded recommendations for future studies around CTE in Alaska, for programming, and for ongoing research.

Methodological considerations for future studies

As this study was a first attempt at operationally defining career pathway components, some of the pitfalls and pratfalls of the survey implementation yielded methodological considerations for subsequent activities. Recommendations in this area include:

Shared or common definitions – An interesting finding of the study was the tremendous variation in the terminology used to discuss these programs, and the interpretations of different terms and labels. As the state seeks to move towards increased implementation and accountability for CP/PoS, an important first step is shared language to describe the phenomena. Though recent legislation (see Alaska State Legislature HB 278) is paving the way for this at the statewide level, legislation and policy are typically read and interpreted by program administrators and teachers are "policy consumers" rather than policy actors (Brenner, 2007). Efforts to engage teachers and researchers in these conversations are merited (Hilty & Giltin, 1994), and as definitions are set, they need to be communicated and messaged to key end-users including parents, teachers, industry partners, and the students themselves.

Intentionality in aligning survey data with respondent knowledge – As this survey solicited several different types of information (catalog data, partnership contact information, student headcounts, and systems evaluation), it is unlikely that a single person in a given district would be the most knowledgeable individual to answer all of the different questions. Future surveys should seek to align not only with the data necessary to answer the research question, but with the knowledge base of the intended participants. In a survey like this one that encompassed data from multiple sources, a series of shorter instruments sent to targeted individuals may have yielded more complete and accurate data. Though many districts addressed this by completing their surveys in groups or committees, more intentional alignment would respect the respondents' time and likely encourage greater participation.

Complementing existing datasets – Though this project was Alaska's first attempt at assessing the components of career pathways and their maturity in implementation, the state does collect data around CTE enrollments, including programs of study. Future research projects should engage more closely with quantitative data collectors at the Department of Education and Early Development, Statewide Institutional Research, the Alaska Commission on Postsecondary

Education, and cluster-specific entities like AHEC to ensure that data collection complements and builds on current understandings without duplication of efforts.

Next steps in programming

The data collected in this project provide support for ongoing activities and suggest opportunities to expand CP/PoS in new ways and directions:

Support – There is great enthusiasm for CP/PoS within the districts, but where there is capacity for expanded programming, they need help – material, technical assistance, advocacy, and partnerships – to actualize this goal. The state must also be cognizant of the needs of small communities, and in small or remote districts without the capacity to offer a range of CP/PoS, Alaska has an opportunity to explore alternative models for providing students with access to career exploration and academic choice.

Differentiated approaches - The survey revealed that the state of Alaska has some shared challenges around CP/PoS, and other challenges are quite place-specific. Approaches to implementation and development should vary per data, and those data should be used to inform, differentiate, and prioritize approaches to CP implementation.

Strategic planning - Because of funding and resource challenges, programs seem to have no choice but to operate opportunistically, relying on the industries and teachers that are available and willing. Those efforts should be lauded, but career planning at the individual level and economic development at the statewide level should be strategic. More targeted analyses of state, community, and student needs should be used to drive decision-making and implementation of new programs.

Outcomes assessment – Though inventories have significant value, the focus of statewide data collection and analysis efforts must go beyond tallies and headcounts. Though there are empirical data about the successes of CP as implemented in other locales and best practice programs, Alaska needs to generate evidence-based data of its own. Program goals, objectives, and indicators for CP should be developed, operationalized, and measured to ensure sound decision-making and responsible stewardship of educational resources. This is difficult to implement; weak practices in outcomes assessment are endemic to CP and CTE programs (Offenstein et. al, 2009). The districts reported that *Assessment & evaluation systems* was their least developed component, and improving performance in this area will require resources and concerted efforts. Nonetheless, outcomes data are necessary for ongoing support and funding, this is a significant area of opportunity and responsibility for statewide leaders.

Further research

Research projects, in their efforts to explain or document a phenomenon, often yield follow-up questions. In order to understand the dynamics of CP, studies like this one will need to be augmented by more in-depth research and up-to-date data. Some of these opportunities include:

Instrument modification and study replication—The utility of any data collected is time-sensitive, and the state of Alaska needs to identify the inventory components necessary for decision-making and policy, then implement a mechanism for collecting them regularly and systematically. These protocol should make provisions for increasing participation from all Alaskan districts, and offer support to smaller districts.

Post-secondary participation – As CP are lifelong journeys for students, they are, by definition, not limited to the k-12 system. A complementary instrument to inventory post-secondary activities, inclusive of the university system, regional training centers, and private entities, should be developed and administered statewide. The integration and comparison of data from k-12 and postsecondary systems should be an important component of the analysis.

Context for observed trends in CP maturity and implementation – The districts’ responses to the first part of the survey yielded interesting quantitative and comparative information about their CP/PoS. Context and explanations for strengths, weaknesses, and differences is needed to better understand the dynamics around CP/PoS implementation. Qualitative studies that explore the districts’ processes and priorities in greater depth would add to the state’s understanding and ability to respond effectively.

Best practices – For programs indicating strong performance and using innovative practices to execute CP/PoS, studies should document their success and impact, and identify which practices may be generalizable or replicable to broader Alaskan implementation.

Student experience and outcomes – Though much of the literature around CP/PoS focuses on student experiences, there are few studies around the impact and outcomes of these network-intensive programs (Lewis, 2008). Both short-term studies of student perceptions of their CTE experiences in Alaska and the longitudinal impacts of CP/PoS would add to the conversation and understanding around these initiatives.

Conclusions

In addition to the districts’ interest and support, CP/PoS currently has some significant external momentum and support: at the federal level with Obama’s stated support for Career and Technical Education programs (Obama, 2014), the forward progress of the Workforce Innovation and Opportunity Act (HB 803, 2013), and via the expected reauthorized Perkins legislation as operationalized by the *CTE Blueprint* (US Department of Education, 2012); at the state level with legislation specifically naming CTE and articulated/dual credit programs (HB 278, 2014), the inclusion of specific CTE eligibility criteria for students to receive the Alaska Performance Scholarship¹⁰ and from the University of Alaska that named dual enrollment a strategic priority in

¹⁰ Alaska Commission on Postsecondary Education; *Alaska Performance Scholarship*;
http://acpe.alaska.gov/STUDENT-PARENT/Grants_Scholarships/Alaska_Performance_Scholarship

its *Shaping Alaska's Future* activities¹¹. It seems opportune and prudent to capitalize on Alaska's enthusiasm and to cull these temporal opportunities to best serve our students and our economy.

Career development and planning serves all – from the individual students, to the families they support, to the communities they inhabit, to the Alaskan economy they shape. It seems that the state of Alaska has made good progress, but the availability of educational opportunities is uneven. Many districts, particularly rural ones, struggle to implement career exploration and planning, and will need support and innovative technologies in order to provide their students with equitable opportunities for career development and exploration at the secondary level. Nonetheless, the school districts' commitment to CP/PoS and CTE is clear. Educational and business leaders who regard career pathways as an effective mechanism for career and economic development have an opportunity to support the school districts and to create and expand these opportunities towards the development of an Alaskan workforce.

¹¹ University of Alaska, *Shaping Alaska's Future*, <http://www.alaska.edu/files/shapingalaskasfuture/SAF-starts-with-you-FINAL.pdf>

References

- Alaska Department of Education and Early Development (EED). (2013) State Report Card 2012-2013. Juneau, AK. Retrieved from <http://education.alaska.gov/reportcard/2012-2013/reportcard2012-13.pdf>
- Alaska Department of Education & Early Development. (2013). *District enrollment totals for all Alaskan school districts*. Retrieved from <http://education.alaska.gov/Stats/#>
- Alaska Department of Education & Early Development, Alaska Department of Labor and Workforce Development & the University of Alaska. (2010). *Alaska Career and Technical Education Plan: A Call to Action*. Retrieved from http://labor.alaska.gov/awib/forms/AK_CTE_Plan_AUG2010.pdf
- Alfeld, C. & Battacharya, S. (2012). Mature programs of study: A structure for the transition to college and career? *International Journal of Educational Reform* 21(2), 119-137.
- Allen, I.E. & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*. Newburyport, MA: Sloan Consortium.
- Arrington, K. (2000). Middle grades and career planning programs. *Journal of Career Development* 27(2), 103-109.
- Bragg, D. (2001). *Promising outcomes for tech prep participants in eight local consortia: A summary of initial results*. St. Paul, MN: University of Minnesota National Research Center for Career and Technical Education.
- Bragg, D., Loeb, J., Gong, Y., Deng, C., Yoo, J., & Hill, J. (2002, November). Transition from high school to college and work for tech prep participants in eight selected consortia. St. Paul, MN: National Research Center for Career and Technical Education, University of Minnesota.
- Bragg, D.D. & Rudd, C.M. (2007). Career pathways, academic performance, and transition to college and careers: The impact of two select career and technical education (CTE) transition programs on student outcomes. Champaign, IL: Office of Community College Research and Scholarship.
- Brenner, D. (2007). Strategies for becoming involved in policy: What was learned when faculty opposed a stand-alone course in phonics. *Journal of Literacy Research*, 39(2), 163-171.
- Castellano, M., Stringfield, S. & Stone, J.R. (2002). Helping disadvantaged youth success in school: second-year findings from a longitudinal study of CTE-Based whole-school reforms. Report of the National Research Center for Career and Technical Education. Retrieved from http://www.nrccte.org/sites/default/files/publication-files/helpingdisadvan_castellano.pdf

- Castellano, M., Sundell, K., Overman, L.T., & Aliaga, O.A. (2012). Do career and technical education programs of study improve student achievement? Preliminary analyses from a rigorous longitudinal study. *International Journal of Educational Reform* 21(2), 98-118.
- Hill, A. (2014). Analysis of EED certified staff data for AY 2013-2014. Anchorage, AK: Center for Alaskan Policy and Educational Research, University of Alaska Anchorage.
- Chesbro, P., Dobnson, P., Gruenig, G., Hill, A., Hirshberg, D., Lo, D.E. & Morotti, A. (2012). *Alaska's university for Alaska's schools 2012*. Fairbanks, AK: University of Alaska.
- Dare, D.E. (2006). The role of career and technical education in facilitating student transitions to postsecondary education. *New Directions for Community Colleges*, 135, 73-80.
- DeLuca, S., Plank, S., Estacion, A. (2006, February). *Does career and technical education affect college enrollment?* Columbus, OH: National Dissemination Center for Career and Technical Education.
- DeMarban, A. (2012, April 10). In Rural Alaska, villages fight extinction once schools close. *Alaska Dispatch*. Retrieved from <http://www.alaskadispatch.com/article/rural-alaska-villages-fight-extinction-once-schools-close>.
- Donnelly, K. (2013). *Professional development needs of Alaska's career & technical education teachers: An assessment*. Anchorage, AK: University of Alaska Anchorage Community & Technical College.
- Folkers, D., Green, K., Hinckley, R. & Mills, D. (Eds.) (2012). *The Career Pathways effect: Linking education and economic prosperity*. Waco, TX: CORD Communications.
- Gurantz, O., & Borsato, G.N. (2012). Building and implementing a college readiness indicator system: Lessons from the first two years of the CRIS initiative. *Voices in Urban Education*, 35, 5-15.
- HB 278, 28th Legislature, Regular Session (Alaska, 2014).
- Hill, A. (2012). *Financial Feasibility of a Residential Boarding Magnet School: Proposed Star of the North School Northwest Arctic Borough School District*. Report prepared for the Northwest Arctic Borough School District. Anchorage, AK: University of Alaska Anchorage Institute of Social and Economic Research.
- Hill, A. & Hirshberg, D. (2006). *Alaska teacher supply and demand 2005 update*. Anchorage, AK: University of Alaska Anchorage Institute for Social and Economic Research.
- Hill, A. & Hirshberg, D. (2013). *Alaska Teacher Turnover, Supply and Demand: 2013 Highlights*. Anchorage, AK: University of Alaska Anchorage Center for Alaska Education Policy Research.

- Hilty, E.B., Gitlin, A. (1994). Teacher education: What is good teaching, and how do we teach people to be good teachers. In Kincheloe, J.L., Steinberg, S. (Eds.) *Thirteen questions: Reframing education's conversation* (98-119). New York, NY: Peter Lang.
- Holbrook, A.L., Krosnik, J.A. & Pfent, A. (2008). Causes and consequences of response rates in surveys by news media and government contractor survey research firms. In J. Lepkowski, N. Tucker, J. Brick, E. De Leeuw, L. Japac, P. Lavrakas, M. Link, & R. Sangster (Eds.). *Advances in telephone survey methodology*. New York, NY: Wiley.
- Huck, S.W. (2008). *Reading statistics and research*. Boston, MA: Pearson.
- Hughes, K.L., & Karp, M.M. (2004). *School-based career development: A synthesis of the literature*. New York, NY: Columbia University Teacher's College Institute on Education and the Economy.
- Hughes, K.L. & Karp, M.M. (2006). *Strengthening transitions by encouraging career pathways: A look at state policies and practices*. Washington, DC: The American Association of Community Colleges.
- Hull, D. (2005). *Career pathways: Education with a purpose*. Waco, TX: Center for Occupational Research and Development.
- Jacobs, J., Warford, L. (2007). Career pathways as a systemic framework: Rethinking education for student success in college and careers. Report of the League for Innovation in the Community College. Retrieved from http://www.league.org/league/projects/ccti/files/Systemic_Framework.pdf.
- Karp, M.M. & Bork, R.H. (2012). "They never told me what to expect, so I didn't know what to do": Defining and clarifying the role of a community college student. *Community College Research Center*. Working Paper No. 47.
- Kosine, N.R. & Lewis, M.V. (2008). Growth and exploration: Career development theory and programs of study. *Career and Technical Education Research* 33(3), 227-243.
- Kotamraju, P. (2007). Researching CTE student success: A new conceptual framework. *Techniques* 82(4), 49-52.
- Lambeth, J.M., Joerger, R.M., Elliot, J. (2009). Implications for focusing research in career and technical education and workforce development. *Career and Technical Education Research* 35(3), 137-153.
- Lewis, M.N. (2008). Effectiveness of previous initiatives similar to programs of study: Tech prep, career pathways, and youth apprenticeships. *Career and Technical Education Research* 33(3), 165-188.

- Longwell-Grice, R. (2003). Get a job: Working class students discuss the purpose of college. *College Student Affairs Journal* 23(1) 40-53.
- Lum, L. (2008). Encouraging the discouraged. *Issues in Higher Education* 24(5) (1-4).
- Makela, J.P. (2006). Advising community college students: Exploring traditional and emerging theory. *Office of Community College Research and Scholarship* 17, 1-5.
- Martin, S. and A. Hill, 2009. Webnote 5. *The Changing Economic Status of Alaska Natives, 1970-2007*. Institute of Social and Economic Research, Anchorage, AK
- McClenney, K., & Dare, D. (2013, July 24). Designing new academic pathways. *Community College Times*. Retrieved from <http://www.communitycollegetimes.com>
- McDiarmid, G. and A. Hill, A, 2010. *Alignment of Alaska's Educational Programs from Pre-School through Graduate Study: A First Look*. ISER Working Paper 2010.1. Anchorage, AK. Institute of Social and Economic Research.
- Nunley, C.R., Shartle-Galotto, M.K., Smith, M.H. (2000). Working with schools to prepare students for college: A case study. *New Directions for Community Colleges*, 111, 59-71.
- Obama, B. (2014). *State of the Union Address*. Washington, DC.
- Offenstein, J., Moore, C. & Schulock, N. (2009). *Pathways to success: Lessons from the literature on career and technical education*. Report of the Institute for Higher Education Leadership and Policy. Retrieved from http://www.csus.edu/ihelp/PDFs/R_PathwaysToSuccess_1209.pdf.
- Oldfield, K. (2007). Humble and hopeful: Welcoming first generation poor and working-class students to college. *About Campus*, 2007(1), 2-12.
- Peterson, G.W., Long, K.L., & Billups, A. (1999). The effects of three career interventions on educational choices of eighth grade students. *Professional School Counseling* 3(1), 34-42.
- Plank, S. (2001). Career and technical education in the balance: An analysis of high school persistence, academic achievement, and postsecondary destinations. Report of the Career & Technical Education National Research Center. Retrieved from http://www.nrccte.org/sites/default/files/publication-files/cte_in_blnce_plank.pdf.
- Rennie Center for Education Research & Policy. (2011). *Student Learning Plans: Supporting Every Student's Transition to College and Career*. Cambridge, MA: Rennie Center for Education Research & Policy.
- Shalcross, L. (2013, January). Making life work. *Counseling Today*, 34-41.
- Silverberg, M., Warner, E., Fong, M., & Goowdin, D. (2004). National assessment of vocational education: Final report to congress. Washington, DC: US Department of Education.

- Stephan, J.L. & Rosenbaum, J.E. (2012). Can high schools reduce college enrollment gaps with a new counseling model? *Educational Evaluation and Policy Analysis* 35(2), 200-219.
- Stone, J.R. & Aliaga, O.A. (2005). Career & technical education and school-to-work at the end of the 20th century: Participation and outcomes. *Career & Technical Education Research* 30(2), 125-144.
- Ting, S.R., Leung, Y.F., Stewart, K., Smith, A.C., Roberts, G.L & Dees, S. (2012). A preliminary study of career education in middle school. *Journal of Career and Technical Education* 27(2), 84-97.
- Tornatzky, L.G., Cutler, R., & Lee, J. (2002). *College knowledge: What Latino parents need to know and why they don't know it*. Los Angeles, CA: The Tomás Rivera Policy Institute.
- US Department of Education, Office of Vocational and Adult Education. (1993). Vocational-technical education: Major reforms and debates 1917–present. (ED Publication No. OVAE-93-7). Washington, DC: US Government Printing Office.
- US Department of Education, Office of Vocational and Adult Education. (2012). *Investing in America's Future: A Blueprint for Transforming Career and Technical Education*. Washington, DC. Retrieved from <http://www.p12.nysed.gov/cte/docs/PerkinblueprintFull2013.pdf>.
- Workforce Innovation and Opportunities Act of 2013, H.R. 803, 113d Cong. (2013).