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Guided Pathways to Careers: Four Dimensions of Structure in Community College Career-Technical Programs

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Abstract

Objective: Some have hypothesized that community college programs are not sufficiently structured to support student success and that students would benefit from more highly structured programs. This study examines the specific ways that structure is expressed in policy and practice at representative community colleges. **Method:** Using data obtained from interviews and program websites at Washington State community and technical colleges, we examine the structure of community college career-technical programs along four dimensions: program prescription, program alignment, access to information, and active advising and support. **Results:** We find high levels of structure on all dimensions in the allied health, computer and information science, and mechanics and repair programs. There are moderate levels of structure in the business and marketing programs. **Contributions:** This study documents the specific ways that community college career-technical programs are structured to support student success, and it provides a framework for examining structure to inform practice and guide future research efforts.

Keywords

program structure, career-technical education, student success, community colleges

Successfully navigating higher educational institutions requires specific knowledge and skills that students from disadvantaged backgrounds may not possess

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(Bourdieu & Passeron, 1977). This concern about gaps in such knowledge is particularly acute at community colleges given the high numbers of low-income and first-generation college students they serve (Bailey, Jenkins, & Leinbach, 2005; Skomsvold, 2014), and their low overall completion rates (Shapiro, Dundar, Yuan, Harrell, & Wakhungu, 2014). The typical community college student may not have parents or friends who have successfully completed college and may thus lack sources of advice on how to best navigate the institution (Karp, 2011; Karp, O'Gara, & Hughes, 2008). And many of the institutional traits that make community colleges unique—their flexibility and numerous programmatic options—may complicate students' ability to successfully enter and complete a program of study (Scott-Clayton, 2011).

Existing theoretical models of student success all underscore the importance of institutional factors to college student success. Tinto's (1993) model of student success examines students' social integration into the college, focusing primarily on 4-year college students and their involvement in college activities. Recognizing the limits of this model for the nontraditional students who make up the majority of community college students, Bean and Metzner's (1985) model focuses on the intensive influence of the external environment relative to the success of this group of students. Reason (2009) highlights the unique role of institutional factors in the conception of student success, particularly the importance of organizational culture and behavior on student outcomes. Extending these models to the success of career and technical students, Hirschy, Bremer, and Castellano (2011) identify the college environment as a key component of student success, including academic and social integration, campus supports, and career integration. Although these models point to the importance of institutions in student success, they do not identify the specific policies and practices through which institutions influence student success.

Recent research has focused on understanding the overall set of institutional policies and practices that together create the *structure* that can support (or impede) student success (e.g., Bailey, Jaggars, & Jenkins, 2015; Center for Community College Student Engagement, 2012; Rosenbaum, Deil-Amen, & Person, 2006). We use the term *structure* to mean a set of integrated policies and practices intended to support students' ability to navigate their way through college to graduation by facilitating key choices and decisions. This article examines the issue of structure in the specific context of community college career and technical education programs.

Using case studies of community and technical colleges in Washington State, we examined the concept of structure in four distinct fields of study: allied health, computer and information science, mechanics and repair, and business. The purpose was to look at the specific ways that structure is expressed in policy and practice at each institution. This study provides a framework for understanding the various dimensions of structure in community college career and technical programs, which may be useful to practitioners as they design programs and policies, and to researchers who seek to measure the adoption and impact of relatively more structured approaches.

The Concept of Structure

The role of structure in community college student success has been growing as an area of research. Based on a review of the research literature in behavioral economics and psychology, Scott-Clayton (2011) proposes the hypothesis that

> community college students will be more likely to persist and succeed in programs that are tightly and consciously structured, with relatively little room for individuals to unintentionally deviate from paths toward completion, and with limited bureaucratic obstacles for students to circumnavigate. (p. 1)

Although the wide range of program choices at community colleges is generally considered a strength, students may be confused and overwhelmed by the number of choices and a lack of clear guidance. Fewer options and clearer pathways—greater structure—may actually help students by reducing confusion and simplifying their potential pathways.

This idea builds on the work of Rosenbaum and colleagues who conducted research comparing students in sub-baccalaureate programs at community colleges and private career colleges (Deil-Amen & Rosenbaum, 2003; Rosenbaum et al., 2006). Based on their findings, they conclude that community colleges are organized in a way that requires students to possess the social know-how, or the skills and knowledge about how to perform the role of a student based in students' existing social and cultural capital, to navigate the college environment. In contrast, they find that private career colleges have institutional structures that reduce the need for social know-how among students. They identify seven strategies that private career colleges use to structure their institutions to facilitate student success. These strategies include eliminating bureaucratic hurdles, reducing confusing choices, providing college-initiated guidance that minimizes the risk of student error, investing in counselors and eliminating poor advice, quickly detecting costly mistakes, and reducing conflicts with outside demands (Deil-Amen & Rosenbaum, 2003).

In *Redesigning America's Community Colleges: A Clearer Path to Student Success*, Bailey et al. (2015) draw on this work as well as years of community college research to propose a guided pathways model in which college programs and services are intentionally organized to help students choose and successfully complete a program of study. They argue that community colleges typically use a cafeteria-style model in which students pick courses from a plethora of choices with limited guidance and are left to make other important decisions mostly on their own. They propose that a more structured approach using the guided pathways model can simplify students' pathways through college by offering clearer choices and appropriate supports when needed. An important element of the guided pathways model is the use of default program maps that serve as the basis for required student academic plans. Rather than allowing students to cobble together their own plans for study, the program maps provide a default curriculum to guide students and advisers. Together they create academic plans that will enable students to take the courses they need to achieve their educational goals as

quickly as possible. Furthermore, the authors discuss the importance of ensuring that programs are aligned with student goals for employment and further education, and that students know and understand their state of progress toward these goals. In addition to these elements, the guided pathways model proposes a more systematic process for advising students when they enroll in college, select a program, and progress through a program to ensure that students stay on track or get back on track when they encounter problems.

The guided pathways approach is supported by research that highlights the problems community college students face because of a lack of supportive institutional structure. Jaggars and Fletcher (2014) found from focus groups conducted at Macomb Community College that students were confused about numerous aspects of the college's intake process, and that informational resources on the college's programs of study were inconsistent and poorly organized, leading to difficulties for students in making decisions about programs. Similarly, from focus groups with community college students in four states, Nodine, Jaeger, Venezia, and Bracco (2012) found that students faced challenges in finding the right information to answer their questions about their college experience.

The role of structure may operate differently based on where students are in their decision making. For students who have not decided on a particular program of study, the guided pathways approach suggests that students begin their decision-making process by choosing from several broad fields of study (sometimes called meta-majors) such as business, health sciences, or social and behavioral sciences, and, along with developmental advising, explore the field to decide if they want to pursue a more specialized study (Bailey et al., 2015; Karp, 2013). Once students have decided on a program, other factors become more salient, such as clearly delineated program requirements and regular feedback to ensure that they stay on their program pathway (Bailey et al., 2015). Although the role of structure is important to both parts of the decision-making process, this research provides an in-depth examination of the factors involved in the latter part of the process—once students have chosen a program.

A Framework for Structure in Career and Technical Programs

There is little guidance in the research literature on how specifically to define and measure structure. Drawing on prior research on structure as well as other literature on student success, this study developed a framework to account for the dimensions of structure specific to community college career and technical programs focused on institutional policies and practices that are relevant once students have selected a program (Deil-Amen & Rosenbaum, 2003; Reason, 2009; Rosenbaum et al., 2006; Scott-Clayton, 2011). Based on a review of the policies and practices discussed in this literature, we identified four dimensions of structure: program prescription, program alignment, access to information, and active program advising and support.

Program prescription relates to the degree of choice in the courses needed to complete a credential and the way the courses are offered. Programs with high levels of program prescription limit course electives and permit little deviation from set schedules. Prior research has identified several practices included under the umbrella of program prescription, which may help students reach their goals, including simplifying program offerings within fields of study, limiting options, and creating clear and coherent program maps (Center for Community College Student Engagement, 2012; Dadgar, Venezia, Nodine, & Bracco, 2013; Rosenbaum et al., 2006; Scott-Clayton, 2011). In addition, reducing complexity in scheduling by offering courses in coherent and predictable ways that enable students to better organize their family and work obligations and ensure that courses that students need are offered when they need them can further help students to complete programs (Kolenovic, Linderman, & Karp, 2013). Likewise, strategies that integrate the scheduling of developmental and general education requirements into program sequences have an impact on students' progression (Bailey et al., 2015).

Program alignment refers to the linkages between programs and the labor market and further educational opportunities. Programs with high levels of program alignment are structured so that rather than existing in an academic vacuum, clear next steps are available to program graduates in education or industry. Particularly for career-technical programs, linkages with the labor market allow students to see an explicit connection between their educational endeavors and future careers (Hirschy et al., 2011; Rosenbaum et al., 2006; Stuart, Rios-Aguilar, & Deil-Amen, 2014). Linkages within and across programs provide opportunities for students to continue their education through "stackable" credentials and facilitate transfer to 4-year colleges (Bailey et al., 2015; Ganzglass, 2014; Handel & Williams, 2012). In addition, linkages with the labor market can include the involvement of employers in program design and planning for better skills alignment, job placement activities for program graduates, and instruction on specific workplace skills (Cleary & Van Noy, 2014; Rosenbaum et al., 2006).

Access to information relates to how the information necessary to make good decisions about courses and program requirements is conveyed to students. Clear and accurate information is essential for enabling students to effectively navigate college (Deil-Amen & Rosenbaum, 2003; Jaggars & Fletcher, 2014; Rosenbaum et al., 2006; Scott-Clayton, 2011). College websites in particular are an important tool in conveying key program information to students, although they may vary in the quality and accessibility of information (Jaggars & Fletcher, 2014; Margolin, Miller, & Rosenbaum, 2013).

Active advising and support refers to the guidance students need to make good decisions and overcome barriers to success. Some colleges have sought to utilize intrusive advising practices that directly engage students in a way that is integrated into their college experience (Karp, 2011; Kolenovic et al., 2013; Rosenbaum et al., 2006). These practices can also include more intentional advising that is targeted to students' specific needs and can make better use of limited college advising staff (Jaggars & Fletcher, 2014; Karp, 2013).

Table 1. Dimensions of Structure.

Dimension of structure	Description
Program prescription	It refers to the degree to which program requirements are clearly specified and the level of flexibility students have in choosing their courses. A prescribed program might include more required program courses than electives, use a cohort model, specify course sequences and milestones for gauging student progress, integrate general education courses into the technical program, and intentionally schedule courses at times that meet students' needs both within and across semesters.
Program alignment	It is the degree to which the program is clearly linked to further employment and educational outcomes. Programs with program alignment might include those that are aligned with industry needs and trends, with local employment opportunities, and with opportunities for stackable credentials and transfer to 4-year colleges.
Access to information	It is the degree to which all important information about the program is available and accessible. Programs with access to information provide clear information on programs and their requirements through their college website and other college informational resources.
Active advising and support	It refers to the degree to which college staff seek to convey program information to students, and monitor and support students' progress through programs. Programs with active advising and student support provide targeted counseling/advising within the program, including information for undecided students, group sessions for advising, program orientations, monitoring of student progress, and supports for struggling students.

Table 1 summarizes our framework for identifying structure in community college career-technical programs. We suggest that programs that are more structured along each dimension will lead to better student outcomes.

With this framework, we aim to understand the types and degree of structure in four career-technical programs in Washington State public community and technical colleges. In this article, we examine the following overarching research question:

> **Research Question 1:** How structured are community college career and technical programs in terms of program alignment, program prescription, access to information, and active advising and supports?

Method

We pursued our research question using a qualitative case study approach that relied on multiple sources of data to allow for triangulation of our findings (Maxwell, 2005). We used administrative data from Washington State to inform site selection. We then collected website information from college websites and interview data from college faculty, administrators, and counselors.

We distinguish between fields of study and programs. Fields of study are broad sets of programs that generally fall within two-digit Classification of Instructional Programs (CIP) code categories, such as business and marketing or allied health.[1] We define programs as groupings of courses that lead to a specific credential; they are subsets of broader fields of study. For example, an accounting long-term certificate is a program within the business and marketing field of study.

Site Selection

Administrative data from Washington State was provided through a data sharing agreement with the Washington State Board for Community and Technical Colleges (SBCTC). These data included transcript records and demographic information for all first-time students at Washington State community and technical colleges who began their studies during the 2005-2006 academic year. We limited our sample to students who attempted a concentration in a particular field of study, taking at least three courses or 12 quarter credits within a single field.[2]

Using these administrative data, we selected four highly enrolled fields of study for further qualitative research, each of which included multiple programs. Specifically, we selected the four fields where the most colleges in the state had more than 20 students enrolled: business and marketing, computer and information science, allied health, and mechanics and repair. The goal in this purposeful selection process was to promote representativeness by selecting typical fields of study (Maxwell, 2005).

We also used administrative data to aid in our selection of college and programs for further qualitative analysis. After selecting fields of study, we identified colleges within each field that had substantial student enrollment (20 students or more) in combination with estimates of college's value-added graduation success rates to select colleges and their programs for in-depth qualitative study through website reviews and interviews. We aimed to select programs that were analogous in their content and goals across the chosen colleges but exhibited a range of performance levels.

Website Review

In the summer of 2011, we reviewed the websites of programs in the four fields of study across the colleges selected. We collected data on all programs at the college within each field of study as defined by the CIP codes. In total, this website review included more than 230 individual programs from 16 different colleges. Through the colleges' websites, we collected information on program prescription (i.e., the amount of flexibility in course taking and specificity in requirements) for each program.

Because websites are an important way that colleges convey information on programs to students, we also assessed the type and quality of information on colleges' programs on their websites according to a researcher-designed rubric that sought to operationalize measures of structure (see the appendix). Using the rubric, we coded program webpages on access to key information on programs and their requirements using a 5-to-1 scale. The highest score of a 5 on the rubric indicates that everything a student might want to know

about the program (such as program requirements, prerequisites, labor market linkages, program performance, and program contact information) is available and easily found on the first visit to the website without making mistakes or backtracking. The score of 1 indicates that most information is unavailable or cannot be found within a few minutes of searching and browsing. The research team performed interrater reliability checks on the use of the rubric to ensure consistency across researchers.

Interviews

To allow for more in-depth data collection about the dimensions of structure, we chose one program within each of the four fields of study as discussed above and studied the selected program in two colleges for a total of eight research sites. We selected the following programs in each field of study for the case studies: accounting in business and marketing, computer network technology in computer and information sciences, medical assisting in allied health, and automotive technology in mechanics and repair.

During the fall of 2011, we interviewed key college staff involved with each of the eight sites, including an academic dean, a department chair in the selected field of study, at least two faculty members in the program, and a counselor or adviser from student services/counseling. The semistructured telephone interviews were typically 1 hour in length, and included questions about college policies and practices related to the four dimensions of structure: program characteristics and requirements, information and services available to students, and the role of college staff in working with students. Separate interview protocols were developed for faculty, counselors, and administrators (including deans and department chairs). We took detailed notes and recorded the interviews for reference to elaborate on the notes when necessary. For each program of study, we synthesized the notes into a detailed case study write-up, which we analyzed for themes and coded for key dimensions of structure. We used the four dimensions of structures as broad organizing themes and coded subthemes within each of these as they emerged. The research team had frequent discussions about the emergent themes to ensure consistency in coding. We subsequently developed summary tables of findings and wrote analytic memos in each topic area.

Findings

In this section, we highlight findings from our data collection and analysis to address our overarching research question. We describe findings related to each of the four dimensions in our framework of structure (program prescription, program alignment, access to information, and student advising and support). When notable differences emerge by program area, we discuss these; otherwise, we discuss broad trends across our range of programs.

Program Prescription

Program prescription refers to how clearly a program's requirements are delineated and the flexibility of those requirements. The website review and the case studies of

individual programs provide evidence that career-technical programs in the fields examined were highly prescribed. Most credits required to complete a program were mandatory (rather than elective) and program-specific (rather than general education) courses. In addition, most programs (with the exception of accounting) gave students little to no flexibility in constructing their own programs.

College staff reported both benefits and drawbacks to program prescription. Highly prescribed programs make it easier for students to navigate requirements and stay on track, and easier for staff to manage the programs while creating more consistency in students' knowledge base and job preparation. However, highly prescribed programs are less flexible and less able to accommodate students' scheduling needs or to help a student recover from a failed course. Compared with the programs examined in other fields, the accounting programs had relatively low levels of prescription with no cohorts and no sequencing requirements.

Course requirements. A key goal of our website review was to better understand each program's course requirements within our four fields of study, gauged by the degree of choice students are permitted in selecting their courses. Based on our definition of structure, a more prescribed program will have a greater proportion of credits that are specifically mandated, with relatively limited choice of electives, and more courses required within the program area itself, rather than the general education curriculum. Across all fields of study we examined, the majority of credits necessary to earn a credential were in required program courses. In long-term certificate programs, the majority of courses were specifically mandated courses within the program area. The occupational associate degree programs that are the subject of this study had more general education requirements and elective courses but still focused heavily on required courses.

Findings from the case studies were generally consistent with the results from the website review. Through interviews conducted with faculty, counselors, and administrators, we found all of the programs to be very clearly prescribed, with few or no elective courses. For most programs, the majority of the courses required for the associate degree were in the technical program area as opposed to general education courses. Among all the courses required for an associate degree, both program and general education, very few were left to the students to choose.

Cohort models. Cohort models, in which students enter a program and take all subsequent courses together, were used in five of the eight programs we examined. College staff reported that the cohort model creates bonds between students, who support each other as they progress through the program. Furthermore, it allows faculty to get to know the students better and to identify problems more easily. As one faculty member stated, "Professional-technical students are mainly in cohorts. They all have the same faculty with whom they develop strong relationships." However, several college staff mentioned that the cohort model has downsides, including a lack of flexibility in students' course schedules to accommodate work or family obligations. The cohort model programs required a full-time commitment, precluding the enrollment of students who

worked substantial hours. College staff reported that this full-time commitment helped students to progress through the program.

Course sequencing rigidity. Some cohort models limited the points in the year when students could enter the program so that cohorts of students could enter together, although some exceptions were made to allow students to join an existing cohort. All programs that used a cohort model had a very rigid sequence of required courses across semesters. Often, if a student missed taking a course with the cohort or did not pass a course in the required sequence, the student could not retake the course until it was offered the next year. The rigid course sequences might pose scheduling barriers for students who work and thus limit the potential benefit of deep faculty relationships with students. However, in the example of one medical assisting program that did not use a cohort model, the program still had rigid scheduling, as many of the required courses had prerequisites and students had to take these courses in a specific sequence. One member of the student services staff observed, "With a prescriptive class, you are limiting the students who can take that program. You can't have a full-time job and take that program." In contrast, the accounting programs offered students a great deal of flexibility in the sequence in which they could take the courses. One of these programs offered a suggested course sequence but did not mandate that students follow it; the other program provided students with a checklist of courses to take but no recommended sequence.

Intentionality in course scheduling. Even if there is a clear sequence of courses to take across semesters, courses must be scheduled within each semester in a way that allows students to enroll in all required courses successfully. Most colleges reported having a way to make sure that classes would be offered to students during the semester they needed them or during a time of day that would be convenient to them. In some programs, college staff reported paying attention to the semesters in which a course was offered to make sure it was available when needed. This was sometimes accomplished through informal faculty coordination, particularly in small programs. In other cases, coordination was a result of the block scheduling of programs, where all classes during a particular time period were those required for the program. For example, one college sought to offer all the courses for their program in 5-hour blocks so that this schedule would be accommodating to working students.

Integration of general education requirements. The extent to which programs integrated general education courses into the sequence of program courses varied across colleges. In several programs, general education courses were prerequisites for program entry. In one medical assisting program, many students took general education requirements while on the waiting list for the program. In other settings, students took their general education courses after completing the program courses. Following a more integrated approach, a couple of the programs decided to make the general education courses part of the required sequence of courses so that students would not delay taking them until the end of their program, when they would be less likely to complete them.

Program Alignment

Program alignment refers to the ways in which programs of study are intentionally structured to be oriented toward the requirements for employment and further education. Program alignment is an important part of structure because it influences both the curriculum that students are exposed to while in the program and students' academic and career opportunities upon graduation. In general, the career-technical programs we examined were tightly aligned with labor markets and local employers through accreditation agencies and advisory boards. This was somewhat less true in the accounting programs than in other program areas. In addition, all of the programs provided students with some assistance in job search skills and job placement, often integrating job search skills directly into the curriculum. In some cases, faculty members used their professional connections to help students identify local employment opportunities. Programs and colleges differed in their emphasis on alignment with further education in terms of how much they encouraged associate degrees and offered opportunities for transfer versus how much they focused on employment.

Industry alignment. Labor market alignment varies more across programs than across colleges within programs. We found that a strong influence of accreditation bodies on college programs was associated with greater prescription and limited choices about what content to offer and how to structure the program. Among the programs we examined, medical assisting in particular operated under tight national accreditation standards. Another source of labor market alignment is the use of advisory boards. Programs in fields with the most rapidly changing technologies seemed to rely most heavily on their advisory boards. Faculty in the computer network technology programs used their advisory boards to keep up with changes in industry standards, modifying the curriculum to incorporate new technology developments. The automotive programs also had advisory boards mandated by the accreditation process and considered them essential to ensuring that students are well prepared for jobs. The advisory boards of the medical assisting programs, in contrast, had only moderate influence, perhaps due to tight national accreditation standards, which limited the extent to which advisory boards could shape the program further. Accounting seemed to have much less labor market alignment under our definition, though this may be because the field has not changed drastically over time. One vice president of instruction and student services explained,

> Programs that have individual accreditations—those accrediting bodies really put them through the sieve as it were. They really drive the limitations of what a program can do . . . whereas [the computer network technology program] is much more closely aligned with their industry through their advisory committees. That's a really big one [difference] that creates two different camps of programs.

Alignment with local employment opportunities. All of the occupational programs we examined were designed to prepare students for employment. However, the programs differed in the approaches used to help students make a seamless transition into the

working world. The majority of programs incorporated some kind of hands-on training to prepare students for the type of work they would be doing upon graduation. This component was the strongest in medical assisting, in which a clinical experience was mandatory and often led to job placement after graduation. Only one other program—an automotive program—required an internship as part of the curriculum. Several other programs offered internships for credit, but program staff reported that few students took advantage of the opportunity. However, two other programs that did not offer internships due to lack of placement opportunities did offer a strong lab component to simulate the work environment. Although the quality of hands-on training may vary, offering some form of hands-on training is an important component of community college career and technical programs (Hirschy et al., 2011).

Most programs helped to prepare students in some way to search for jobs, either through credit courses on job seeking skills or by incorporating career guidance into the standard curriculum through content such as mock interviews or information on resume preparation. Faculty members differed in the degree of their involvement in job placement for students. In three of the programs, program faculty and staff did not assist students with job placements; in another program, the program director did some informal networking with program graduates or sent out information about available job opportunities. One faculty member described the actions of another faculty member in the program: "Anytime there is a job offer that comes in, he pushes it out on the Facebook group." In contrast, some faculty members were very active in job placement and helped students find jobs that were a good fit. Another college staff member stated, "We have more job offers coming in than we have qualified students to come out to them. Our best students get hired no problem . . . the rest of them, I don't know."

Finally, all colleges received data from the state on the employment outcomes of their graduates, although there was variation in the extent to which this information was valued, considered timely and accurate, and used. Accrediting bodies that required careful tracking of employment placement and success heavily influenced whether or not employment tracking was a priority for colleges. Other colleges used more informal methods of tracking students, such as optional online social networks for alumni.

Educational alignment. "Stackable" credentials—that is, credentials designed to connect to one another in a sequence—were an important component of the occupational programs we studied. All eight programs offered at least one certificate that could be earned along the way to an associate degree. However, there was a great deal of variety in how many other opportunities there were to earn shorter term certificates in specific areas along the way to the associate degree. Three programs—across three different fields of study—offered no further opportunities for stacking credentials beyond one certificate and a degree. Others offered a range of additional options, from a single, short, three-course accounting clerk certificate to seven, specialized, short-term automotive technology certificates that could be earned either along the way to an associate degree or separately.

Beyond variation in "stackable" credentials, there was variation in the extent to which programs aligned with further educational opportunities. At some colleges, the

career-technical program was seen as a terminal degree with further education seen as unnecessary, and at others, it was seen as important to give students the option to pursue further education. Views on this issue differed, even between programs within the same field and with similar content at different colleges. Some of the programs had articulation agreements—two programs had agreements with colleges in another state, one program had an agreement with a college in state, and two programs were in the process of developing agreements with colleges in state. However, most programs considered the employment of their graduates as their primary goal. Thus, baccalaureate transfer was rare even among those programs that had articulation agreements with bachelor's programs. A faculty member at a college that had recently established an articulation agreement with an out-of-state 4-year college observed, "Most of our students are looking for employment, but the college likes to have that [transfer] option."

Access to Information

A well-structured program should provide both prospective and current students with the information needed to make good decisions, and college websites are increasingly the primary information source for students (Margolin et al., 2013). Thus, we examined the availability and clarity of information on program offerings to help students select programs of study and on program requirements to help students complete programs. We found mixed evidence regarding access to information. In particular, program websites sometimes lacked certain information that might be important for prospective or current students. This is especially concerning because program staff indicated that websites were the primary source of information for students. However, in interviews, program administrators, counselors, and faculty members generally expressed positive feelings about the state of access to information.

The programs relied heavily on the college websites for disseminating information to students. Most, if not all, information necessary to choose programs and learn about program requirements was available online, including college catalogs, career guides, schedules of courses, and program planning guides. One counselor commented on the importance of web resources for students: "The information age has made it easy for students to get their questions answered. Just the multitude of ways, the number of access points has grown." Most faculty and staff reported that websites were the primary source of information for students and, generally, the next most common source of information was college personnel. Across the colleges, faculty and staff generally felt that students were getting the information they needed, although a few specific concerns were raised. As one administrator stated, "Information is readily available. We make great efforts to make that information available to students. We could do a better job at it. Sometimes it is hard to get the students to respond to that information."

During our website review, we looked at the availability and clarity of information on key program characteristics. Our intention was to better understand whether or not the website provided the information necessary to decide whether to pursue a program and to understand the steps necessary to complete a credential from the viewpoint of a prospective or current student. The college websites with the highest quality

information offered detailed planning worksheets and a sample student schedule, whereas websites with lower access to information did not include information about which courses were required or had conflicting information between the program website and the college's official course catalog. Websites with the highest quality information clearly listed information about program length, full-time or part-time options, program start dates, course scheduling, and employment outcomes and transfer opportunities for graduates. High-quality program websites also listed current contact information of someone with whom students could discuss the program.

Colleges sought to provide information on their program offerings, course requirements for those programs, and changes to their program offerings and course requirements. In terms of program offerings, students received information through college websites, new student orientations, counseling/advising centers, and worker retraining centers. Websites and counseling/advising centers were the two main sources of information. Word of mouth was also cited as a way that students found out about programs. At least three of the program websites also had informational videos. For course requirements, the college website was a major source of information in all of the programs. Several colleges explicitly designed their websites to be the primary source of such information. Most of the materials produced by the colleges were available online and accessible by students, faculty advisers, and general advisers. Most of the programs also made information on their course requirements available in the form of brochures, program handbooks, planning guides, and course catalogs. When there were changes, the methods for communicating these to college advisers and others varied somewhat across the programs in our sample. Staff at four of the programs actively communicated changes by meeting with advisers or emailing them. In three programs, changes were communicated more passively through curriculum committees or program planning sheets.

Overall, respondents across the programs indicated that they thought the necessary information was available for students to enroll in and complete programs. Particularly in the cohort-based programs, respondents indicated that they did not observe much confusion among students because requirements were explicitly laid out and students were closely monitored by program faculty. This may indicate that access to information is a more important dimension of structure for programs with less program prescription—that is, with programs that are not cohort-based and where faculty are not closely monitoring student progression.

Active Advising and Student Support

Active advising and student support refers to the actions that college staff members take to assist students with enrolling in, progressing through, and completing programs. The eight colleges we studied had highly prescribed programs, reducing the amount of individual guidance and support students needed for academic planning. Despite this, students were closely monitored and supported by program faculty, with whom they often spent extensive amounts of time. To some extent, the intensity of advising and student supports was related to whether or not programs used a cohort

model. With the cohort model (used by five of the eight programs we profiled), close monitoring of student progress is built into the model of instruction. Faculty spent time with students during a substantial number of class sessions, sometimes as often as every weekday. They get to know students well and are able to monitor student progress easily throughout the entire program. In addition, in cohort model programs, there is typically only one course for students to register in for the next semester, and students are easily advised in this way. In programs without a cohort model, we found a wider range of advising and student supports. Colleges took additional measures to ensure student success, including implementing early warning systems, having program-specific advisers, and offering group advising days. Using strategies such as these, programs can build advising and support into the program so that all students receive additional support, even if they do not actively seek it.

One-on-one advising. In all of the colleges studied, once students entered a program, they were advised by the program faculty. In smaller programs, the one or two full-time faculty in the program often handled advising. In most programs, especially those with a cohort model, faculty members spent 30 hours or more per week in the classroom with their students. These faculty members often developed strong relationships with students and supported them in completing the requirements of the program. In contrast, undecided students were assisted by general counseling staff at the college who talked with them about their options. Student orientations also helped some students to clarify their goals and program choice. Program staff members were more likely to become involved when students narrowed their choices to a general field of study through orientations designed to help students select careers, or through meetings with faculty or visits to labs.

Group advising. Group advising sessions were offered across all colleges and fields of study. These sessions were generally designed to ensure that all students in a program registered for the appropriate courses in the subsequent term to stay on track toward completing their programs. In addition, individual advising sessions with faculty were often available when needed. In addition, most of the colleges offered a general orientation session, but there was variation in the use of program-specific orientations. Medical assisting and automotive technology programs had a separate orientation but computer network technology and accounting programs did not. Some colleges conducted dedicated advising days in which the program faculty worked with all students to advise them on their plans for the next year.

Follow-up advising and supports. At most colleges, faculty members were very involved with their program's students and monitored their progress closely. Monitoring was more proactive in computer network technology and automotive technology programs, and less so in accounting and allied health programs. One automotive faculty stated, "The faculty know what's going on with their students. They are very proactive in helping students work things out." In addition, several colleges had or were developing early warning systems to allow for identification of and early intervention for

struggling students. All colleges offered tutoring in math and English for all students at the institutional level. Colleges also offered a range of other supports, which differed by college, program, and the presence of support programs such as TRiO or WorkFirst. An administrator at one college described the process as follows:

> Anyone can use the early alert system. All information is available on the website; we promote this to faculty, staff, and students for their use. If a student misses a class for a whole week, faculty can enter this in the system. If a faculty member has difficulty with a student, they can enter this into the system. There is always a follow up contact made—some mental health, tutoring. . . . Who follows up, depends on the need.

In addition, students associated with special programs such as these often received case management services, extra tutoring, and specialized counseling. Several programs also had arrangements through which more advanced students helped newer students who were struggling.

Summary of Program Structure

Based on the dimensions of structure presented in Table 1, none of the programs we studied were loosely structured; all were either moderately or highly structured. Table 2 summarizes these findings across the four dimensions of structure at each of the eight programs. Six of the eight programs we studied in depth were highly structured, all of which were in fields of study where occupational or industry licensing or skill standards strongly influenced program organization (allied health, computer and information science, and mechanics and repair). Specifically, in these programs, program requirements were highly prescribed, labor market linkages were fairly tight, and there were strong student supports either embedded into the program or other aspects of the student experience.

The two accounting programs were moderately structured. They had some degree of program prescription but offered flexibility in scheduling and elective courses; their labor market linkages were weaker than those observed in other career-technical programs, and they did not have particularly proactive counseling and advising practices. To some extent, these programs' practices may have been guided by the norms associated with the field of accounting. According to college program staff, accounting does not have industry standards or guidelines at the sub-baccalaureate level. The lack of specific industry and occupational requirements for programs may be reflected in greater flexibility in how the programs are organized, such as the absence of a cohort model. In these ways, the accounting programs were more similar to other programs at the colleges that were focused on preparation for baccalaureate transfer, and likely to have less structure and fewer labor market linkages.

Program prescription was the dimension for which we found the least variation in structure. Five of the eight programs we examined followed a cohort model, in which both the courses required and the sequence in which they should be taken were mandated. (In some cases, there were still opportunities for students to pursue electives

Table 2. Levels of Program Structure at Each Program by Dimension.

	Medical assisting		Accounting		Computer network technology		Automotive	
Dimension	Program 1	Program 2	Program 3	Program 4	Program 5	Program 6	Program 7	Program 8
Overall level of structure	High	High	Moderate	Moderate	High	High	High	High
Program alignment	High	High	Low to moderate	Low to moderate	Moderate to high	Moderate	High	High
Program prescription	High	Moderate to high	Moderate	Moderate	High	High	High	High
Access to Information	Moderate to high	Moderate to high	Low to moderate	Moderate	Moderate	Low to moderate	Moderate	Moderate to high
Advising and student support	High	Moderate to high	Moderate	Moderate	High	High	High	High

after the daily schedule or over the summer.) In the medical assisting program that did not follow a cohort model, there was still relatively little flexibility in the program, and course prerequisites caused natural sequencing to occur. In the accounting programs, most courses were mandatory, but there were more opportunities for students to customize their programs.

Programs were also strongly aligned with labor markets and local employers. Labor market alignment was generally achieved through accreditation agencies, advisory boards, or both (with the partial exception of the accounting programs). Program staff also incorporated job search and job placement activities directly into the programs, at least to a moderate extent. Programs varied, however, in the degree to which they were aligned with further educational opportunities, particularly baccalaureate transfer; in general, most programs were viewed as providing terminal degrees.

In some ways, the highly prescribed nature of the programs obviated the need for highly structured information delivery, advising, and student support. Students within highly prescribed programs are given less information and guidance because options tend not to be overwhelming or confusing. That said, some programs offered strong supports, integrating advising and counseling directly into the student experience through early alert systems, program-specific advisers, and group advising days.

Discussion and Implications

By providing a potential approach to assessing the level of structure in community college career and technical programs, this framework builds on the existing knowledge about structure in community colleges as developed by Rosenbaum et al. (2006), Deil-Amen and Rosenbaum (2003), Scott-Clayton (2011), and Bailey et al. (2015). The framework also adds to the existing conceptualization of institutional factors related to student success in community college career and technical programs (Hirschy et al., 2011). Furthermore, this framework may be useful as a tool to guide the assessment of structure in community college career and technical programs in ongoing efforts to promote student success. This framework is intended to help guide both research and practice by identifying these four dimensions of structure and specific examples of how these are manifested in practice. Researchers may use this framework as a guide to examine structure in career and technical programs, and its relationship to student outcomes. Practitioners may seek to review their programs with these practices in mind to assess their level of structure in these four dimensions.

By examining the specific dimensions of structure in our framework—program prescription, program alignment, access to information, and active program advising and support—this study illustrates how structure operates at the program level across various fields of study. All of the programs we examined exhibited fairly high levels of structure across the four dimensions in our framework. In practice, however, these dimensions of structure were manifested in different practices across the different programs. Among the four fields in our study, accounting was not as highly structured as the others. Notably, this field is different from the others in that it does not have the same strong industry standards guiding the curriculum. For example, the

accreditation requirements of the allied health field and the industry certifications in the information technology field provide external standards that appear to be an important guiding force in the structure of the associated career and technical programs. This adds to previous research findings on program-level practices associated with unique institutional subcultures that promote student success in varying ways (Nitecki, 2011).

Ideas about the role of structure at community colleges have taken hold in community college reform initiatives. The Completion by Design initiative has been promoting reforms based on the idea that more structured pathways will help promote student completion (Dadgar et al., 2013). Likewise, in its national reform efforts, Complete College America (2014) has been promoting guided pathways among several reforms to promote student success. And many of the reforms through the U.S. Department of Labor's Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant program are designed similarly. Research on these initiatives is still emerging, so this study provides a framework that may help inform ongoing research. This framework will enable other researchers to assess the level of structure in other colleges and programs by providing a broad organizing set of dimensions to guide research efforts that will allow for the comparable documentation of structure. Moreover, even though community colleges are sometimes criticized for their lack of structure, we inform the conversation by finding evidence that at least career-technical programs at community colleges can be highly structured.

Building on these broad models of the role of structure in student success, this framework can provide a guide for a more specific understanding of how career and technical programs are structured. A careful examination of these particular programs may reveal dimensions of structure that could be strengthened, and this research suggests some possible strategies to be implemented in each dimension of structure. However, where programs are already well structured, as in several of the programs examined in Washington State, colleges may benefit more from a focus on other contributors to student success, including the processes by which undecided students decide upon and enter into programs of study. In addition, colleges may be interested in how more structured practices may be applicable to liberal arts programs at community colleges.

Future research should continue to examine structure and its connection to student outcomes where more rigorous data are available, linking specific institutional practices to student outcomes. Beyond the examination of structure, research should examine in a more targeted way how college-level practices related to student success might explain differences in program outcomes. Furthermore, future research should examine these same issues in different contexts (outside of Washington State) to examine whether community college career and technical programs are in fact as highly structured as those we observed in this study. Finally, research should build on this knowledge of structure in career-technical programs by examining structure in transfer programs in liberal arts or business, which may inform whether potential approaches to creating more structure in these programs are warranted.

Appendix

Website Review—Access to Information Rubric

5. Very clear and easy to navigate: Everything a student might want to know about the program (such as program requirements, prerequisites, labor market linkages, program performance, and program contact information) is available and easily found on the first visit to the website without making mistakes or backtracking.
4. Mostly clear and easy to navigate: Information about the program (such as program requirements, prerequisites, labor market linkages, program performance, and program contact information) is mostly available, though it may take a little bit of website exploration or occasional backtracking to find.
3. Somewhat clear and easy to navigate: Information about the program (such as program requirements, prerequisites, labor market linkages, program performance, and program contact information) is mostly available, though it requires some investigation to find out where on the website it is located.
2. Some information about the program is available but not everything that a potential or current student would want to know (such as program requirements, prerequisites, labor market linkages, program performance, and program contact information). Alternatively, it may be available but very difficult to find.
1. When seeking information about the program (such as program requirements, prerequisites, labor market linkages, program performance, and program contact information), it is mostly unavailable or cannot be found within a reasonable amount of time.

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Notes

1. Using a taxonomy adapted from the National Center for Education Statistics, we categorized courses in students' transcripts into one of 22 fields based on their Classification of Instructional Programs (CIP) codes: arts, humanities, and English; science, technology, engineering, and mathematics (STEM); social and behavioral sciences; agriculture and natural resources; automotive and aeronautical technology; business and marketing; secretarial and administrative studies; communications and design; computer and information science; cosmetology; culinary services; engineering and architecture; engineering/science

technologies; education and child care; allied health; nursing; construction; manufacturing; mechanics and repair; transportation; protective services; and other career-technical programs.

2. Washington State colleges operate on the quarter system; students must take at least 12 credits in a given quarter to be considered full-time students. Thus, under our definition, a concentrator is a student who attempts at least one term's worth of coursework in a given field of study.

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