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Research, Planning & Professional Development
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Results From a Comprehensive California Community Colleges Online Education Study

A REPORT TO THE 2024–2025 CALIFORNIA STATE LEGISLATURE

MARCH 2025

SUMMARY OF KEY FINDINGS

The COVID-19 pandemic dramatically accelerated the adoption of online education in higher education. While online learning was already growing in popularity before 2020, the pandemic forced a rapid and widespread shift toward remote instruction. In the United States, online course enrollment surged from 37% in 2019 to 73% in 2020, with California experiencing an even more significant increase. Between 2013 and 2023, online course offerings within the California Community Colleges (CCC) system have nearly tripled. This growth is primarily driven by a significant increase in asynchronous online courses (306%), followed by synchronous online courses (261%). While hybrid course offerings have increased since 2013, they remain a smaller proportion of overall online course modalities, accounting for less than 10%. Although the initial surge has subsided, online learning remains a dominant force in higher education, with over half of all college students in the US and California currently enrolled in at least one online course (IPEDS, 2025). The pandemic's impact was particularly profound on community colleges, where nearly all students and faculty experienced online learning firsthand, fundamentally altering the institutions' teaching and learning practices.

The key findings from this comprehensive study on online education reveal the following significant challenges and opportunities within the California Community Colleges (CCC) system:

1. Inconsistencies in how online courses are defined and tracked hinder data analysis and informed decision-making. The current practices used to flag online courses are applied inconsistently, and definitions for the various online formats lack standardization.
2. While many colleges offer online support services, access and quality vary significantly.
3. Marketing efforts often rely heavily on websites, and challenges like staffing shortages and technology limitations hinder online service delivery.
4. Student and faculty preferences for online learning are mixed, with preferences leaning toward in-person and/or asynchronous online learning.
5. While online course-taking positively impacts degree completion, it does not appear to significantly impact transfer rates.

Recommendations

The following recommendations aim to enhance online education within the CCC system:

- Establish clear definitions and guidelines for online education;
- Improve data collection and reporting practices and procedures;
- Invest in faculty development and technology infrastructure; and
- Promote ongoing research and evaluation.

By implementing these strategies, the CCC system can create a more equitable, effective, and engaging online learning experience for all students.

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Policy Context and Background

The adoption of online education has dramatically accelerated across all educational levels, including higher education, in response to the 2020 COVID-19 pandemic. While online learning had been gaining traction, the pandemic forced institutions to adapt rapidly, resulting in a historic shift in how higher education is delivered.

Before the pandemic, online course enrollment was already increasing. However, the pandemic dramatically accelerated this trend. In the United States, the percentage of college students taking at least one online class surged from 37% in 2019 to 73% in 2020.[1] California saw an even more significant increase, from 31% to 76% during the same period.

Although the peak of online learning has passed, it remains a dominant force in higher education. As of 2023, over half of all United States and California college students were enrolled in online courses.[2] The pandemic's impact on community colleges was particularly profound. Nearly all students and faculty across the country experienced online learning firsthand, leaving a lasting legacy on the institutions' teaching and learning practices. This report summarizes a comprehensive study conducted by a third-party organization to shed light on campus-specific activities, instruction, student engagement, access gaps, and outcomes related to online education in the California Community College (CCC) system commissioned by the legislature.

Bill Summary

California Senate Bill 117 (SB 117) Section 24 commissioned a "comprehensive study on the current online and hybrid course offerings by community colleges" to glean "information about best practices and pedagogy in online education for community colleges, and how colleges and the state should support effective teaching and learning in online and in-person course offerings to close equity gaps and maximize student access and outcomes." This study was commissioned to try to answer the following key questions on the nature and value of online and hybrid course offerings at community colleges:

A. How are quality in-person, online, and hybrid course offerings designed and delivered to promote equitable student access and success?

B. Is there an optimal mix of online and hybrid course offerings when compared to in-person course offerings in connection with maximizing student completion?

C. Are there student populations that would not otherwise access postsecondary education were it not for a specific course modality? What are their success rates in the course modalities they can access?

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[1] National Center for Education Statistics Trend Generator accessed on May 12, 2024.

[2] National Center for Education Statistics Trend Generator accessed on February 26, 2025.

D. What are current state and local policies that guide and direct the development of online course offerings and services? Should these policies be updated to allow the state to better meet students' needs and close student equity gaps?

E. How does the state fund online and hybrid course offerings at community colleges? What are the differences in cost of delivery between synchronous, asynchronous, online, hybrid, and in-person course offerings? How are community college revenues affected as a result of student demand for these types of course offerings?

F. Do online or hybrid course offerings consistently provide necessary academic supports and basic needs student services? What student services should have online or hybrid course offerings?

G. Are there best practices for online and hybrid course offerings, with proven results in student success and student equity, that can be taken to scale at community colleges?

H. Comparing the transferability to the University of California and the California State University of online and hybrid course offerings with their fully in-person counterparts, are there barriers to transfer from the community colleges to the University of California and the California State University based on course modality?

Definitions & Requirements for Online Education

Online education, also known as distance education, e-learning, or virtual learning, is a method of learning that utilizes the internet and digital platforms. It employs various technologies to deliver instruction, enable communication, and assess student progress. Students can access course materials at their own pace or according to a predetermined schedule.

The state regulations for distance education align with federal regulations under Title 34, Subtitle B, Chapter VI, Part 600, Subpart A, 600.2. This set of rules includes the federal government's definition of distance education, instructor contact, and student engagement requirements. The Code of Federal Regulations (CFR) defines distance education as any educational instruction delivered to students who are physically separated from the instructor(s), employing one or more of the following technology types:

- Internet
- One-way and two-way transmissions (broadcast, cable, satellite, etc.)
- Audio conferencing
- Other media used in conjunction with the listed technologies

Distance education often includes expectations for instructor-student interaction, defining the frequency and depth of regular communication. In 2021, this CFR was revised to clearly differentiate between correspondence and distance education courses and introduced the language of synchronous (in real-time) and asynchronous (not at the same time) instruction in its guidelines for distance education (refer to sidebar for definitions).

Distance Education Type Definitions

Asynchronous: Asynchronous distance education courses do not have designated scheduled meeting days and times. Students complete class activities and assignments as detailed in the course syllabus by logging into the online system, completing work, and submitting it electronically to the instructor.

Hybrid: Partially online courses that combine traditional, face-to-face instruction

and distance education components with either synchronous or asynchronous instructor-student interaction through communication technology.

Hyflex: A version of hybrid that allows students to choose between face-to-face and distance education options session-by-session.

Synchronous: Synchronous distance education courses are structured similarly to in-person classes. However, rather than being on campus, students interact with the instructor via interactive technology (such as Zoom). All students meet in real-time at scheduled class times through a remote connection (via Zoom or some other interactive technology).

In California, state regulations on distance education or online education fall under the California Code of Regulations for Title 5, Division 6 under Chapter 6, Subchapter 3, Article 1. These regulations (1) establish a statewide definition of distance education[3] (which aligns with the federal definition), (2) outline curriculum approval and design considerations,[4] (3) set instructor contact and student engagement requirements,[5] and (4) define tracking and reporting procedures for districts implementing distance education programs.[6]

What We Know About Online Education

The literature on the effectiveness of online education has been very mixed, with the vast majority of studies conducted on asynchronous forms of learning vs. hybrid and/or synchronous forms. Some research suggests online courses might be less effective than in-person courses (e.g., Bettinger & Loeb, 2017; Figlio et al., 2013; Johnson & Mejia, 2014; Xu & Xu, 2019), and studies focusing on California community colleges specifically showed lower pass rates for students in online courses (Hart et al., 2018; Johnson & Mejia, 2014). However, other research has shown no differences in the course completion outcomes between students who took in-person and online courses. Hachey et al. (2022) note in their integrative review of the online course literature that studies that conducted meta-analyses and controlled for student factors, such as GPA, found no significant differences between course modalities (e,g., Bernard et al., 2004; Driscoll et al., 2012; Zhao et al., 2005).

The effects of online course-taking on degree attainment and graduation rates are complex and depend on several factors. Online courses can help students graduate quickly by offering flexibility to fit their schedules (Xu & Jaggers, 2013). These authors found that students who take online classes graduate more rapidly than those in departments that offer fewer online courses. Additionally, online course-taking was associated with a higher likelihood of successfully graduating college within four years. Another study by Fischer and his colleagues (2022) showed that online coursework improved the probability of graduating in four years and decreased the time-to-degree compared to in-person coursework.

Johnson and Mejia (2014) found that results from their study drew a brighter picture regarding long-term outcomes. They examined how online course-taking affected students' ability to transfer to a four-year university or obtain an associate's degree. They found a positive association between online courses and successful long-term outcomes where students who took at least some online courses were more likely than those who only took traditional courses to earn an associate's degree or transfer to a four-year institution. This association was strongest for students who took more than 60 units at the community college. The authors note that for students juggling school, family,

[3] § 55200. Definition and Application.

[4] § 55206. Separate Course Approval.

[5] § 55204. Instructor Contact.

[6] § 55210. Ongoing Responsibility of Districts.

and work obligations, the ability to maintain a full-time load by mixing in one or two online courses per term may outweigh the lower chances of succeeding in a given online course. Furthermore, taking the online course can help expedite completion or transfer when waiting for the needed course (see Appendix A: Literature on Online Education).

Research Study Approach

In spring 2024, the California Community Colleges Chancellor's Office (CO) contracted with the Research and Planning Group for California Community Colleges (The RP Group) to conduct a comprehensive study of online education in the California Community Colleges (CCC) system to understand how it is implemented and what impact it has had on degree completion and/or transfer to a university.

While the legislative bill identifies the use of "a randomized controlled trial that analyzes student outcomes relating to online education for different student populations" (SB 117, Section 24(a)6(b)), this study leverages pre-existing observational data collected by the Chancellor's Office Management Information System (COMIS) to understand the impact of online education on degree completion and transfer to university by employing a quasi-experimental method called instrumental variables estimation (IVE). This method produces a local average treatment effect of online course-taking that would be similar to that found in a specific set of participants of a randomized experiment called compliers: individuals who receive treatment or the intervention when assigned to the treatment group but not when they are assigned to the control group. This method is an extension of linear regression and allows researchers to back out the effect of other relevant variables that would explain their outcome of interest so that they can produce consistent estimates of the causal effect of their predictor of interest on the outcome (What Works Clearinghouse [WWC], 2022).

For this study, our predictor variable of interest is students' online course-taking intensity, as measured by the proportion of credit online courses a student attempts out of all the credit courses they attempt within four years. The outcome of interest for this study is the completion of an associate's degree or transfer to a university within four years of credit enrollment. Data for this analysis were obtained from COMIS, including student demographics, enrollment records, completion information, and college characteristics.

To contextualize our understanding of the impacts of online education, the study includes:

- A review of existing literature and resources related to online education in higher education;
- Observational data collected from website reviews and documentation, schedule of classes, distance education policies; and
- Qualitative information from statewide surveys administered to CCC students, faculty, and student support services professionals to shed light on their experiences, challenges, successes, and the opportunities they see to improve online education and the technologies to support learning.

All findings from this study are summarized below by each legislative question with appendices that include research briefs for each activity.

Sample Information

The following sources or samples were used for this report:

Statewide COMIS records: 355,133 students from four fall-term cohorts who enrolled in a credit course for the first time between 2013 and 2016. The sample was filtered to include only degree and/or transfer-intending students (defined as having completed at least 12 credit units across four years since enrolling and having indicated degree completion or transfer as their educational goal at a community college). The sample excluded students who identified as dual or concurrently enrolled at a high school or who previously earned any degree or enrolled at a university.

Statewide Student Survey Results: 34,815 students from across 116 colleges enrolled in the CCC system in fall 2024.

Statewide Faculty Survey Results: 5,709 faculty representing 112 CCCs who taught in fall 2024.

Statewide Student Support Services Leads Survey Results: 52 college responses in fall 2024.

Publicly available college artifacts: 30 randomly selected colleges' schedules of classes for the fall terms of 2020 through 2023, 115 college student support services webpages, and 73 districts' distance education policies, procedures, and handbooks.

Research briefs with detailed information from these sources are provided in the Appendices A through H.

Findings

The findings from this study are organized by the key questions from the legislative bill and presented below in that order.

A. How are quality in-person, online, and hybrid course offerings designed and delivered to promote equitable student access and success?

Local and Statewide Policies and Resources

California community colleges follow a mandated review and approval process for all programs and courses, outlined in the Chancellor's Office Program and Course Approval Handbook (PCAH).[7] This process includes reviewing and developing courses regardless of modality and serves as a "North Star" for districts on matters related to the course and programs offered. While the handbook provides information about minimum standards and guidelines for approval for courses and distance education courses, there are no direct references or guidelines for how courses and programs should be designed or delivered to promote equitable student access and success, as it is under the purview of each district and its corresponding curricular policies.

At present, the closest guidance at the state level is provided by the California Virtual Campus-Online Education Initiative (CVC-OEI). The CVC-OEI provides a framework for designing and assessing quality online courses that meet regulatory requirements for online education and accreditation requirements. The framework includes a rubric used to determine whether online courses align with standards in four specific areas that have been found to support online student success. These four areas include an assessment of: (1) content presentation, (2) interaction, (3) assessment, and (4) accessibility to ensure that the online learning environment is navigable, user-friendly, and promotes engagement and learning.

As a complement to this resource, the Peralta Community College District developed the Peralta Equity Rubric, a rubric that specifically focuses on practices to support an equitable and inclusive online learning environment for students. This rubric includes eight components that assess: (1) technology, (2) student resources and supports, (3) universal design for learning, (4) diversity and inclusion, (5) images and representation, (6) human bias, (7) content meaning, and (8) connection and belonging. Both of these tools were designed to provide colleges and faculty with resources and support to promote effective online teaching and learning experiences and do not appear to differentiate between fully or partially online courses.

At the time of this report, there were no formal statewide requirements for online courses to be designed or assessed using either rubric, with the exception of the CVC-OEI rubric, which is used for online courses made available in the CVC Exchange. The CVC Exchange is a repository of all available online course offerings across participating CCCs.

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[7] See California Code Regulations, Title 5, § 55000.5

In a review of the 73 California community college districts' (CCCD) policies and guidelines for online education, there seems to be fairly consistent definitions of online education that identify the use of technology to facilitate regular and substantive interaction between instructors and students who are geographically dispersed. However, the definitions of specific modalities, such as hybrid learning, seem to vary significantly across districts and often lack clear articulation within district policies. This inconsistency extends to curricular approval processes and instructor qualifications for online teaching, which also vary widely between districts (see Appendix C: Review of Distance Education Policy Scans).

While clear efforts are being made to close any learning experience gaps between in-person learning and technology-enhanced or technology-based learning, how these courses are designed and delivered vary depending on local practices and policies.

Actionable Insight #1

To provide clearer distance education/online education definitions and guidance for how instructional modalities are factored into the course and program approval process, consider updating the state's Program and Course Approval Handbook (PCAH) to include more standardized expectations and definitions of online education at the district/college level.

Faculty Perspectives

In a statewide survey of over 5,400 faculty, respondents shared a number of diverse strategies to promote online learning, with a strong emphasis on clear course orientation, supportive learning environments, and varied assessment practices (see Appendix F: Research Brief on Faculty Experiences of Online Education). Most faculty reported that they provide essential course information, connect students to institutional services, and foster student engagement. They utilize multimedia, encourage peer interaction, and align assessments with learning objectives.

However, there are areas for improvement. Fewer than half of faculty respondents address technology barriers or human biases in course content. While they connect students to academic support, guidance to career, transfer, and mental health resources could be strengthened. Faculty primarily connect students to support services through syllabus links, indicating a need for more proactive and personalized approaches.

B. Is there an optimal mix of online and hybrid course offerings when compared to in-person course offerings in connection with maximizing student completion?

Tracking Online Education

To fully understand the impact of online education, the ability to distinguish between the different forms of distance education modalities is needed for courses that are partially or fully online. At present, colleges report the instructional modality of a class offering via a reporting data element called XF01 - Instructional Method that describes and collects information about whether distance

education and internet modes of instruction are synchronous (i.e., simultaneous interaction between the instructor and students) or asynchronous (i.e., delayed interaction between the instructor and students) (see XF01 - Instructional Method for detailed definitions).

This data element helps distinguish between courses taught using distance education modes such as one- or two-way interactive video and/or audio (XF01 codes 51-54 and 61-64) or via the internet (XF01 codes 71 [synchronous] and 72 [asynchronous]). However, the current COMIS data element dictionary (DED) definitions do not appear to appropriately reflect modern-day distance education practices (i.e., hybrid and hyflex modalities). The COMIS data element XF01 collects the method of instruction of a given class session. However, at present, code value options include two distinct concepts: (1) instructional method (the format in which instruction is delivered - e.g., lecture, lab) and (2) instructional modality (the location/how instruction is delivered - e.g., distance education). The two concepts appear to be conflated and interpreted differently across districts, leading to confusion and inconsistency in the coding of this data element across the CCC system.

In a review of XF01 codes across a random list of 1,119 classes offered across 30 colleges in the fall terms between 2020 and 2023, we found a high degree of inconsistency in the application of the codes for in-person, online, and hybrid courses across colleges. These coding discrepancies have also been observed among departments within colleges and across different terms, suggesting a lack of standardized coding protocols for courses (see Appendix B: Research Brief of Instructional Modality Code Comparisons with Schedule of Class Descriptions).

Examples of how districts inconsistently use these codes can be found in comparisons between class schedule descriptions and the COMIS code reported for those classes. For example, we found inconsistencies with how hybrid classes are coded. Some districts used multiple codes to flag a given section as hybrid, pairing a lecture/lab code (02/04) with a distance education internet code (71/72), while others used this code combination to flag whether the fully online class was a lecture or lab class (see Appendix B: Research Brief of Instructional Modality Code Comparisons with Schedule of Class Descriptions).

Given these inconsistencies in coding practices across the CCC system, understanding the optimal mix of online and hybrid course offerings compared to in-person course offerings in connection with maximizing student completion will need to be interpreted with caution, as the data are likely incomplete and not fully reliable. Moreover, with no formal or standardized definition of hybrid in the data collection at this moment, information about the effect of hybrid courses is a somewhat incomplete picture.

Actionable Insight #2

In order to effectively track and monitor the state of online education, community college districts need clearer guidelines and definitions for online education that will keep up with the ever-evolving changes in technology and innovations in distance education.

Statewide Online Course Offering Patterns

In a review of online course offerings across the CCC system between 2013 and 2023, we found that online course modalities have increased nearly threefold over this 11-year period, with the greatest percentage increase in online modality type occurring in online asynchronous course offerings (306% increase), followed by online synchronous course offerings (261%). Hybrid course offerings have been available since 2013, and while these offerings have also increased over time, the relative proportion of offerings makes up less than 10% of all modalities.

A review of the online course offerings by instructional program[8] shows that the programs with the largest increase from 2013 to 2023 in online offerings were mostly in the lab-heavy and technical-skills, trade-focused programs such as Architecture, Engineering and Industrial Technologies, Commercial Services, Agriculture and Natural Resources, Physical Science. Of all the programs, the programs with consistently robust online offerings have been Information Technology (07), Business and Management (05), and Library Science (16)—all programs that have more likely embraced online technologies and resources than programs such as lab-heavy programs that rely on physical resources (e.g., machinery, welding) (see Appendix D: Research Brief on Statewide California Community College Trends on Online Education Between 2013 and 2023).

Student and Faculty Experiences with Online Education

Student Preferences

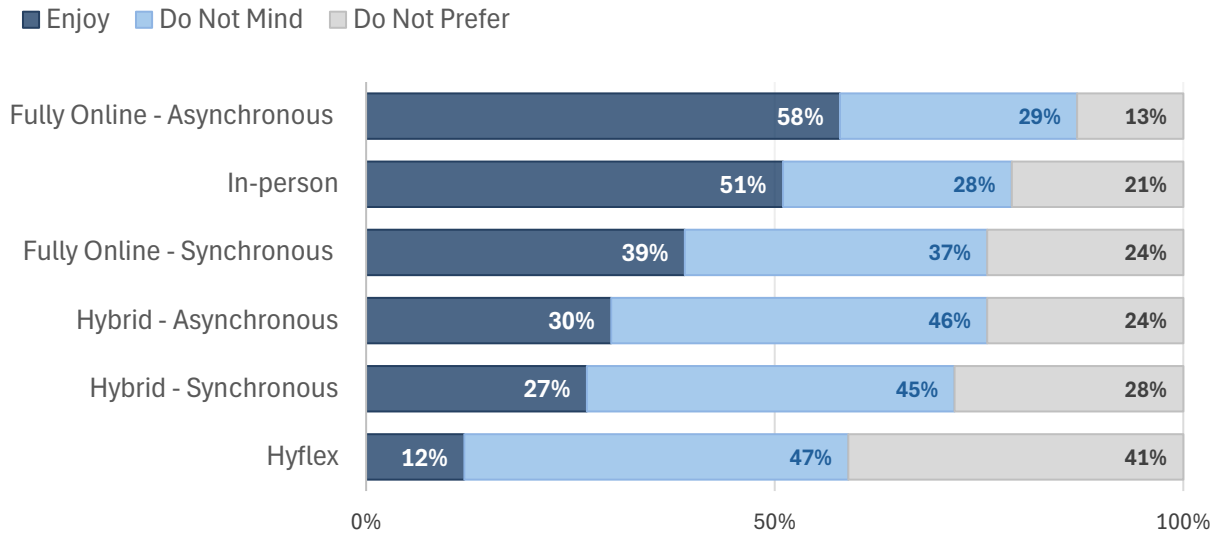
Among surveyed students who had taken an online course in the past year at the time of the survey, an overwhelming number favored fully online asynchronous learning, with 58% reporting that they enjoyed this course modality (see Figure 1). This preference surpassed fully online synchronous, hybrid asynchronous, and hybrid synchronous formats. Notably, of the students who had taken a course with an online component over the past year, 51% of students reported also enjoying the fully in-person course format, making it the second most preferred course modality overall. Hyflex courses—those with a combination of in-person and online learning that gives students the flexibility to choose how they participate—were the least enjoyed course modality among surveyed students (see Appendix E: Research Brief on Student Experiences of Online Education).

These findings may reflect students' general preference for asynchronous courses because these courses tend to provide students with more flexibility than regularly scheduled courses. Based on these findings, community colleges should consider prioritizing the development of high-quality asynchronous courses that allow students to learn at their own pace and according to their own schedules while maintaining academic rigor. By offering more options in this format, colleges can meet the needs of a broader student base, including those who are balancing work, family, or other commitments.

[8] Instructional programs were coded based on the two-digit taxonomy of program (TOP) code.

Figure 1

Course Modality Preferences Among Online Students



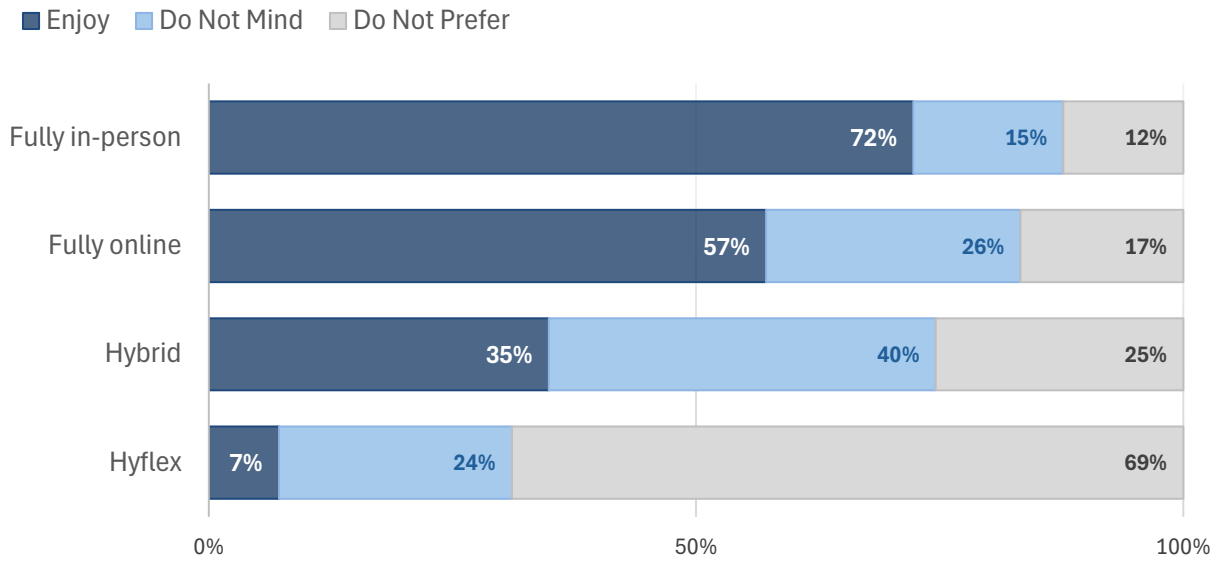
	Hyflex	Hybrid - Synchronous	Hybrid - Asynchronous	Fully Online - Synchronous	In-person	Fully Online - Asynchronous
Enjoy	12%	27%	30%	39%	51%	58%
Do Not Mind	47%	45%	46%	37%	28%	29%
Do Not Prefer	41%	28%	24%	24%	21%	13%

Faculty Preferences

A survey of faculty who had taught online courses in the past year at the time of the survey revealed a strong preference for fully in-person instruction, with fully online as the second most enjoyed format (see Figure 2). However, a similar proportion indicated that they did not prefer teaching in these two modalities (12% and 17%, respectively). Nearly a quarter of the surveyed faculty indicated they did not prefer teaching hybrid courses, and over two-thirds of faculty expressed they did not prefer teaching in a hyflex modality (see Appendix F Research Brief on Faculty Experiences of Online Education).

Figure 2

Course Modality Teaching Preference for Instructors



	Hyflex	Hybrid	Fully online	Fully in-person
Enjoy	7%	35%	57%	72%
Do Not Mind	24%	40%	26%	15%
Do Not Prefer	69%	25%	17%	12%

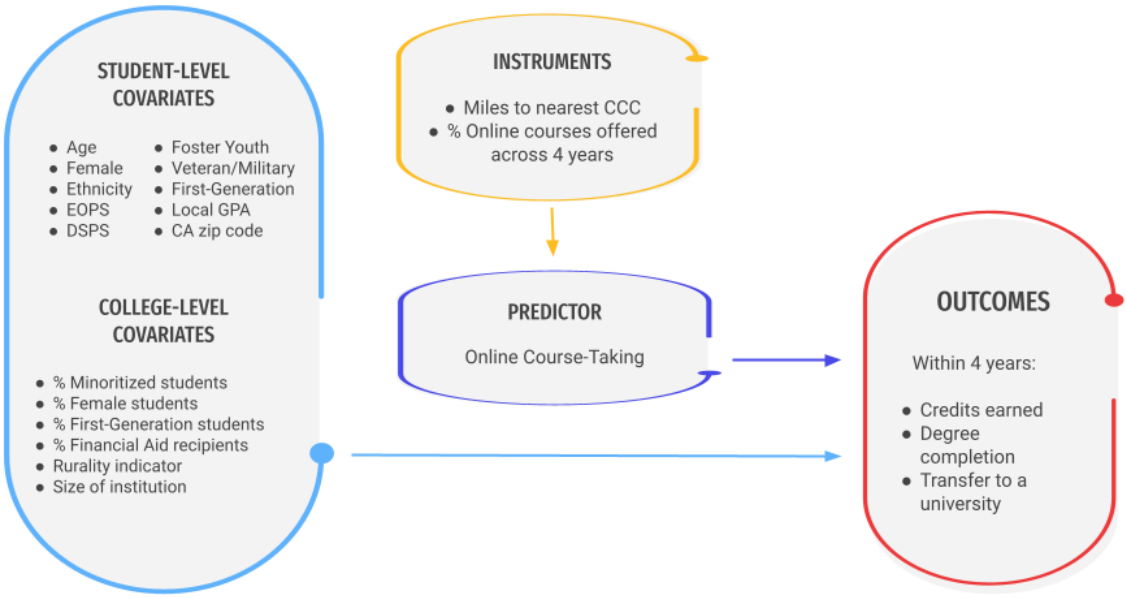
Evidence for the Impact of Online Education on Student Completion

To understand the broad impact of taking an online course, we conducted an impact analysis that looked at the proportion of credit online courses taken over four years and the impact on degree completion and/or transfer within four years.

Given the challenges with implementing a statewide random-controlled trial (RCT) study across a system of 116 community colleges, we leveraged a statistical method used to estimate the causal impact of online course-taking called instrumental variables estimation (WWC, 2022). This method isolates the effect of a given predictor or treatment (i.e., online course-taking) on a given outcome (i.e., completion), similar to what an RCT does when isolating the effect of a treatment for a specific group of participants called *compliers* (participants in a treatment group who comply with the treatment). We then employ a specific statistical method that identifies factors that would predict the occurrence of the treatment. By honing in on this part of the treatment, we can produce relatively unbiased estimates of the effect of the predictor or treatment on the outcome of interest (see Appendix H: Research Brief of the Causal Effects of the Online Course-Taking on Completion).

Figure 3

Statistical Model to Estimate the Causal Effect of Online Course-Taking on Student Completion

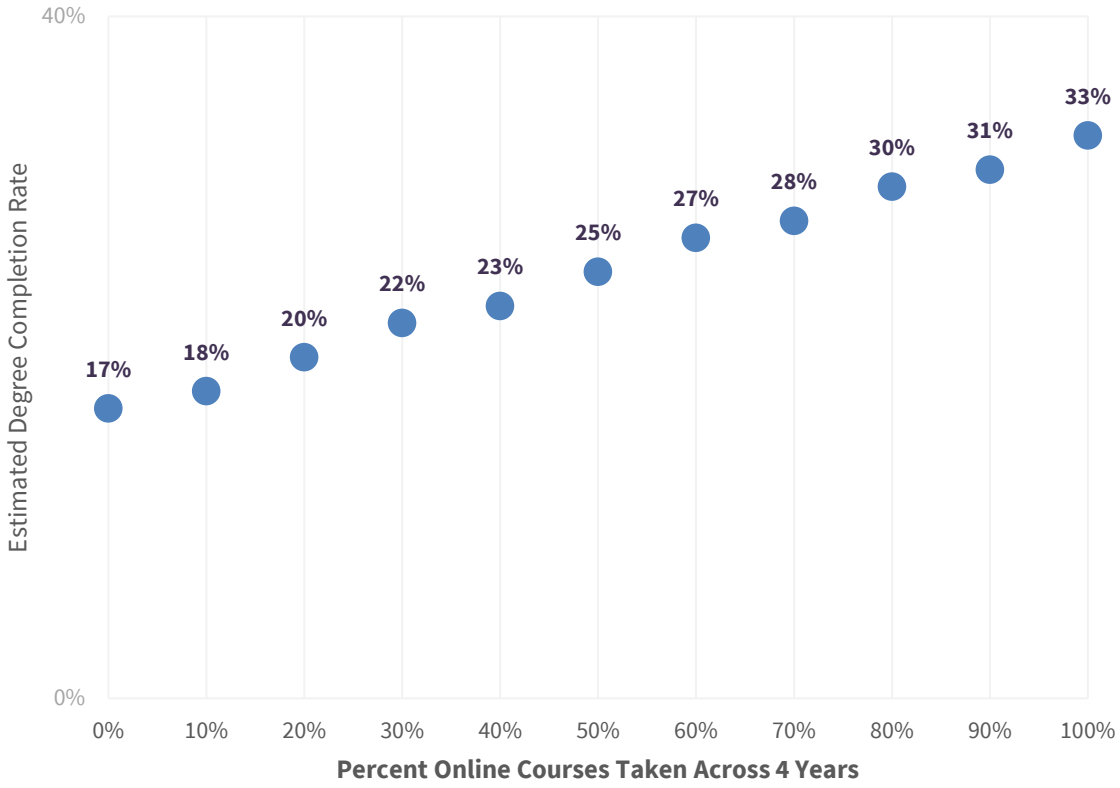


Analyses indicate that students who attempt a greater proportion of online credit courses tend to earn more credits overall and are more likely to graduate from the community college within four years; however, their likelihood of university transfer remains unaffected. On average, students who took all their courses online earned 26 more credits than those who took no online courses. We also found that for every 1% increase in the proportion of online courses a student takes, their chances of completing a degree within four years increases by 17%. For example,

Figure 4 reflects the relative impact on degree completion rates based on the percentage of online courses students take within four years. Importantly, there is no evidence that taking online courses negatively impacts students' ability to transfer to four-year institutions. While the study found that Black/African American students earned fewer units overall on average compared to their peers, this difference did not significantly affect their degree completion rates. Moreover, the impact of online course-taking intensity on student outcomes appears to be consistent across various student subgroups, including race/ethnicity, income status, gender, and disability status (see Appendix H: Research Brief of the Causal Effects of Online Course-Taking on Completion).

Figure 4

The Relative Impact on Degree Completion Rates Based on the Percentage of Online Courses Students Take Within Four Years



C. Are there student populations that would not otherwise access postsecondary education were it not for a specific course modality? What are their success rates in the course modalities they can access?

Online education offers significant advantages in terms of flexibility and accessibility, making it attractive to diverse learners, including working adults, individuals in remote locations, and students with disabilities (e.g., Huntington-Klein et al., 2017; Xu & Jaggars, 2013). Research suggests that online courses can increase college access for nontraditional and underserved student populations (Hachey et al., 2022). However, existing data on enrollment patterns present a mixed picture, with some studies indicating that historically underrepresented groups may be less likely to enroll in online courses compared to their peers (Johnson & Mejia, 2014).

Access to Online Course Patterns

In reviewing the enrollment patterns of students by various demographics, we found that the following categories of students are more likely to enroll in online courses than their counterparts—a trend that has held consistent across the CCCs since 2013:

- Students 25 years of age and older
- Female students
- American Indian/Alaska Native[9] students
- Black/African American students
- White students

The student group less likely than their peers to enroll in online courses are students who have reported disabilities, with no notable differences observed for students receiving need-based aid, and students identified as veteran/military, foster youth, or first-generation (see Appendix D: Research Brief on Statewide California Community College Trends on Online Education Between 2013 and 2023).

Success in Online Course Patterns

A review of the completion rates in online courses over time shows that the completion rates (defined as success and retention[10]) have been increasing over time, with the gaps that have been observed between online and in-person courses narrowing (see Appendix D: Research Brief on Statewide California Community College Trends on Online Education Between 2013 and 2023). Whereas the success rate gap between in-person and online credit courses was seven percentage points in 2013, the gap has decreased to four percentage points as of 2023, representing an improvement in outcomes observed in online course offerings.

In comparing the success rates across various student characteristics, we found that the gaps between in-person and online course performance are wider for Black/African American, Pacific Islander/Hawaiian Native, and American Indian/Alaska Native students, as well as students older than 25. Despite the differences in online course performance patterns for these groups, results from the study examining the impact of online course-taking on longer-term outcomes, such as degree completion, show similar benefits across these groups (see Appendix H: Research Brief of the Causal Effects of Online Course-Taking on Completion).

[9] Post-pandemic, American Indian/Alaska Native students were the least likely to enroll in online courses.
[10] Success is defined as letter grades A, B, C, or P, and retention is defined as letter grades A, B, C, D, F, P, NP).

D. What are the current state and local policies that guide and direct the development of online course offerings and services? Should these policies be updated to allow the state to better meet students' needs and close student equity gaps?

A scan of the 73 district websites shows that all districts have some form of board policy or guidelines related to distance education (see Appendix C: Research Brief of Distance Education Policy Scans).

Under California Code Regulations, Title 5, § 55000.5), the Chancellor's Office (CO) is required to maintain and distribute a Program and Course Approval Handbook (PCAH) for community colleges, which many districts use as their "North Star" for curricular approval processes for programs and courses offered. This handbook references Title 5 guidelines pertaining to distance education that include topics such as definition and application, course quality standards, instructor contact, separate course approval processes, faculty selection and workload, and the ongoing responsibilities of districts.

While the handbook has general curricular guidelines regarding distance education, it lacks specific guidance on developing and implementing online education, leading to inconsistent definitions and standards across districts regarding online learning and instructor qualifications. A review of the policies shows that the most common definition of online education includes references to the use of technology to facilitate regular and substantive contact between the instructor and students in different locations. However, terms for various forms of online education such as hybrid are not consistently mentioned in the district policies nor defined when provided. Moreover, curricular approval processes and instructor qualifications for online teaching vary from district to district, with some districts identifying the need for specific types of professional development or certification for teaching online, while others do not.

Actionable Insight #3

The variation in definitions and standards across districts may create challenges for students navigating courses taken across multiple colleges within the system.

E. How does the state fund online and hybrid course offerings at community colleges? What are the differences in cost of delivery between synchronous, asynchronous, online, hybrid, and in-person course offerings? How are community college revenues affected as a result of student demand for these types of course offerings?

Funding by Class Accounting Method

Distance education or online courses are funded according to the attendance accounting methods for calculating full-time equivalent students (FTES) based on course section enrollments. According to the 2024 Student Attendance Accounting Manual (SAAM), FTES calculations for distance education courses vary depending on these four unit computation methods:

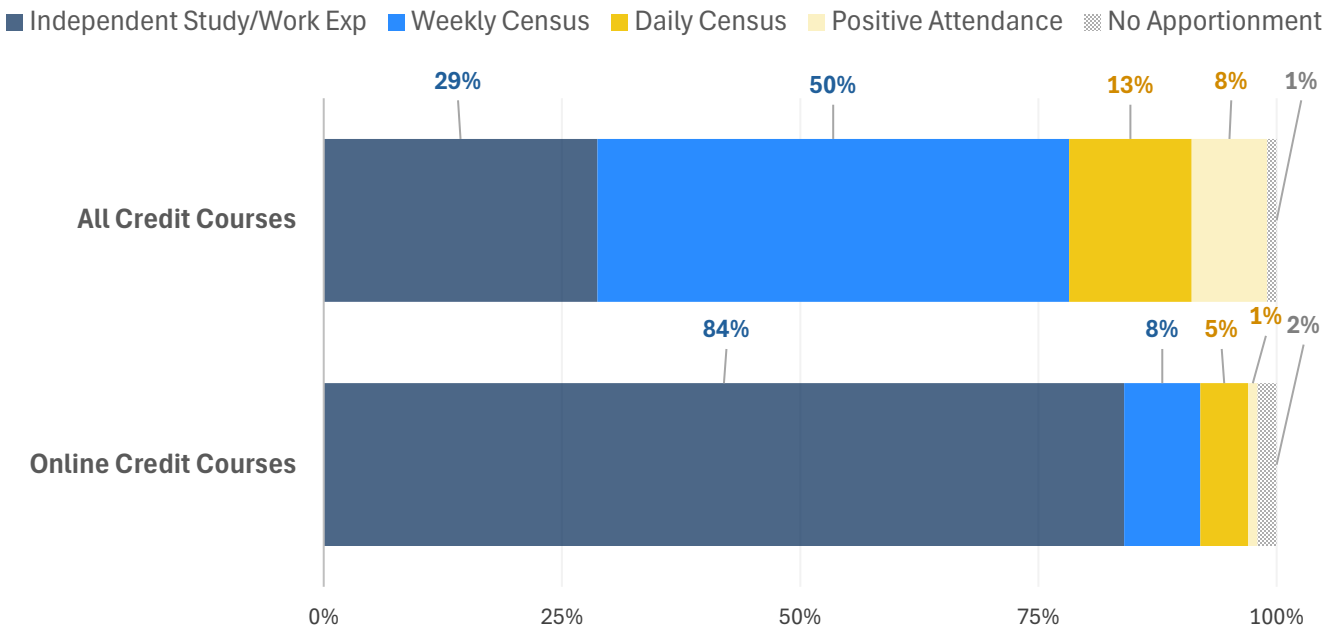
- Weekly Student Contact Hours Procedure (i.e., Weekly Census)
- Daily Student Contact Hours Procedure (i.e., Daily Census)
- Actual Student Contact Hours of Attendance Procedure (i.e., Positive Attendance)
- Alternative Attendance Accounting Procedure (e.g., Independent Study and Work Experience)

Most online courses are coded using the Alternative Attendance Accounting Procedure, generating comparable FTES numbers to in-person courses. Consequently, changes in demand for online versus in-person modalities do not appear to be affecting the FTES-based funding models. With future funding tied to completion rates, the growing popularity of online courses could lead to more funding, since online courses appear to boost degree completion.

Between 2013 and 2023, the greatest share of all credit courses was coded as Weekly Census (50%), followed by Independent Study and Work Experience (29%) (see Figure 5). In comparison, online credit sections predominantly utilize the Independent Study and Work Experience accounting method (84%). Relatively few online credit courses were coded as Weekly Census (8%), Daily Census (5%), or Positive Attendance (1%).

Figure 5

Accounting Method Comparisons: Average Between 2013 and 2023 for All Credit vs. Online Credit Courses



	Online Credit Courses	All Credit Courses
Independent Study/Work Exp	84%	29%
Weekly Census	8%	50%
Daily Census	5%	13%
Positive Attendance	1%	8%
No Apportionment	2%	1%

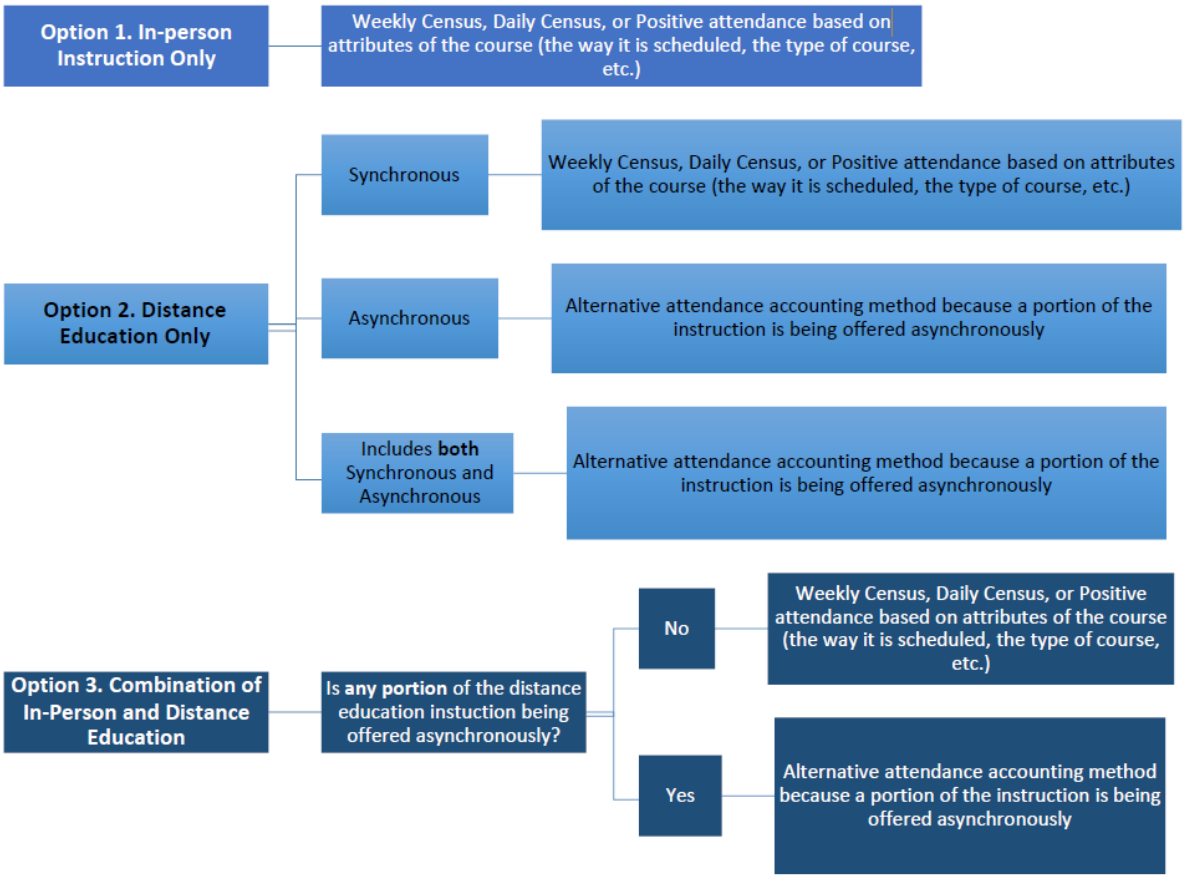
During the COVID-19 pandemic, the Chancellor's Office provided guidance on calculating apportionment for courses that transitioned to online or distance education, which clarified accounting method practices between in-person and online course modalities based on course attributes (see Figure 6). For example, whereas the Independent Study and Work Experience method was historically used for the vast majority of distance education/online courses in the past, the guidance clarifies this method should be used for asynchronous instruction, regardless of the course's overall online or in-person format. For synchronous online courses, districts can code these sections as Weekly or Daily Census, or Positive Attendance, depending on the attributes of the course such as schedule and number of weeks.

Figure 6

Chancellor's Office Guidance on Attendance Accounting Method for Distance Education Courses

INSTRUCTION MODES AND ATTENDANCE ACCOUNTING

Start with option 1, 2, or 3 below and follow the chart to determine the appropriate attendance accounting procedure.



Note: Image copied from the October 21, 2021, Chancellor's Office Memo

Cost of Delivery

We were not able to locate any public financial reporting for CCCs that included expenses by class modality. Annual financial and budget reports appear to include only expenditures reported for instructional activities at the four-digit program level and not at the classroom/modality level (see the district fiscal reporting portal for examples of the accounting information available). Given the lack of public documentation for this information, we are unable to determine the cost of delivery for the various online and in-person modalities. However, future research could be explored to

examine the relationship between specific types and changes in instructional spending and physical facilities usage and scheduling to support online education (e.g., technology, software) and online course offerings, as well as student support services.

F. Do online or hybrid course offerings consistently provide necessary academic supports and basic needs student services? What student services should have online or hybrid course offerings?

Before the pandemic, most online student support services were typically provided to students via three common methods: a third-party application, an institution's website or secure student portal, and/or an online learning management system (Bailey & Brown, 2016). While both online teaching and learning rubrics mentioned previously highlight the importance of student support structures, there is very little empirical evidence around what support structures are more effective and how they support online learning specifically. The CVC-OEI indicates that a virtual one-stop shop is a place where students in the online learning environment can access critically important student support services in a holistic manner. These "online support ecosystems" can be embedded into a college's learning management system (most CCCs use Canvas) and, most importantly, should provide easy access to real-time support for students.

Results from a statewide survey of student support services leads at the CCCs and a website analysis revealed that while many colleges (34%) have a central online space for accessing student support services, only a small fraction (10%) qualify as true "one-stop shops" with easily accessible and clearly delineated online support services (see Appendix G: Research Brief on Student Support Services Lead Experiences and Online Offerings). In general, these online spaces for student support services appear to have the following characteristics:

- High prevalence of central online spaces: 34% of colleges have a central online space for student support.
- Ease of access: 78% of these central spaces are easily accessible from the college's homepage.
- Limited "one-stop shop" functionality: Only four colleges appear to have true one-stop shops with readily available online support options.
- Variability in quality: The quality of these online spaces varies significantly, with some providing well-organized service descriptions and easy access, while others offer limited information and support options.

Moreover, while online student support services are prevalent across the CCC system, their availability and accessibility vary significantly. For example, colleges offer virtual academic counseling, career services, and DSPS services, but their availability of features like online appointment scheduling and live interaction with staff varies considerably. In addition, service areas such as financial aid have lower rates of online service availability compared with other services.

The modalities used for online support also differ across different types of student support services (see Figures 7a and 7b). Live chat/messaging is the most common vehicle across all service areas generally, particularly in tutoring and/or writing centers and career services. Virtual office hours are frequently utilized in bursar's offices (i.e., payment processing) and career services, while Zoom

appointments are less common generally but prevalent in bursar's offices and somewhat prevalent in library services. Electronic form and paperwork submissions are still largely used by tutoring/writing centers, library services, career services, and academic counseling/advising areas.

Figure 7a

Modalities of Support Offerings by Service Area – Paper and Paperwork Submissions and Live Chat/Messaging

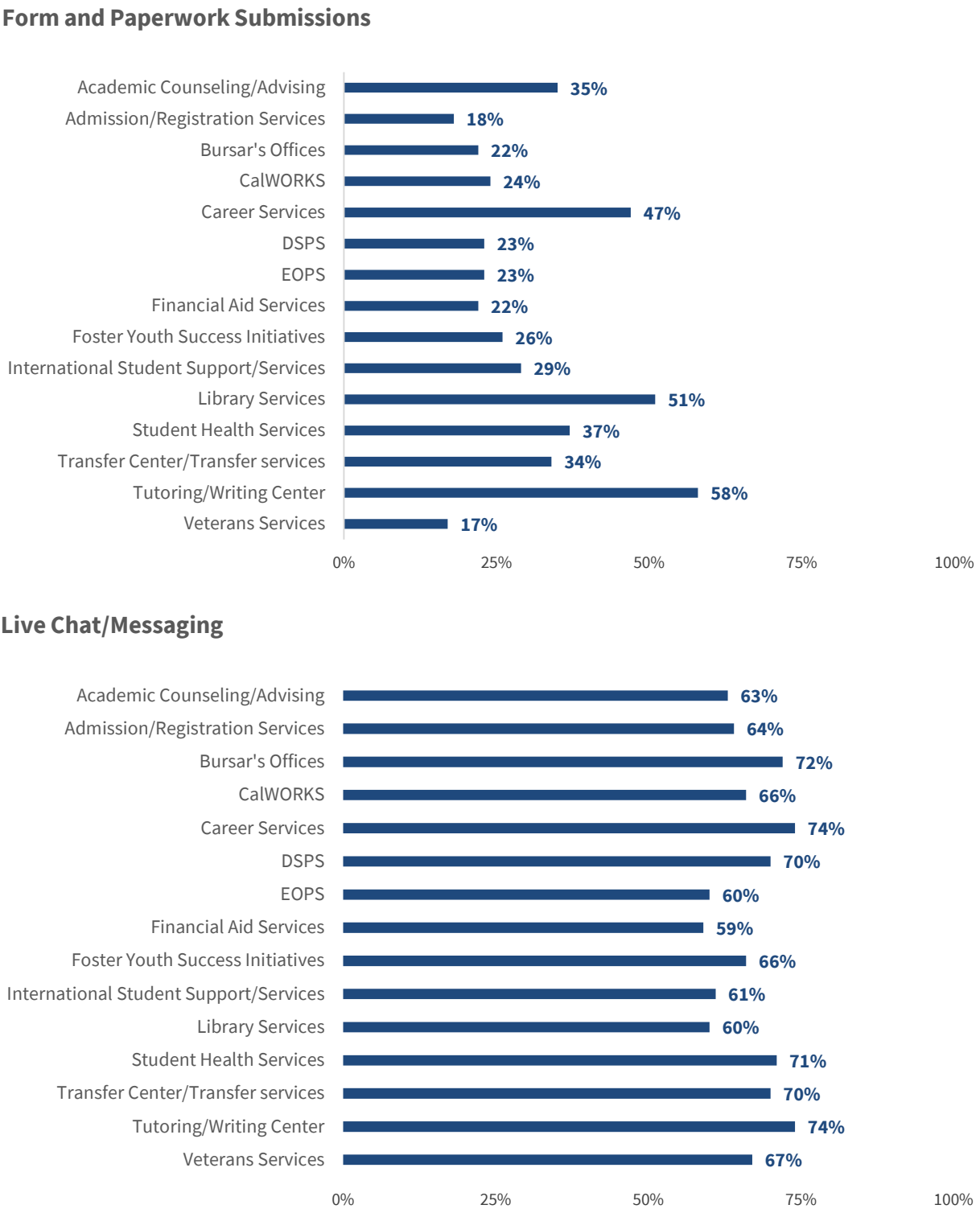
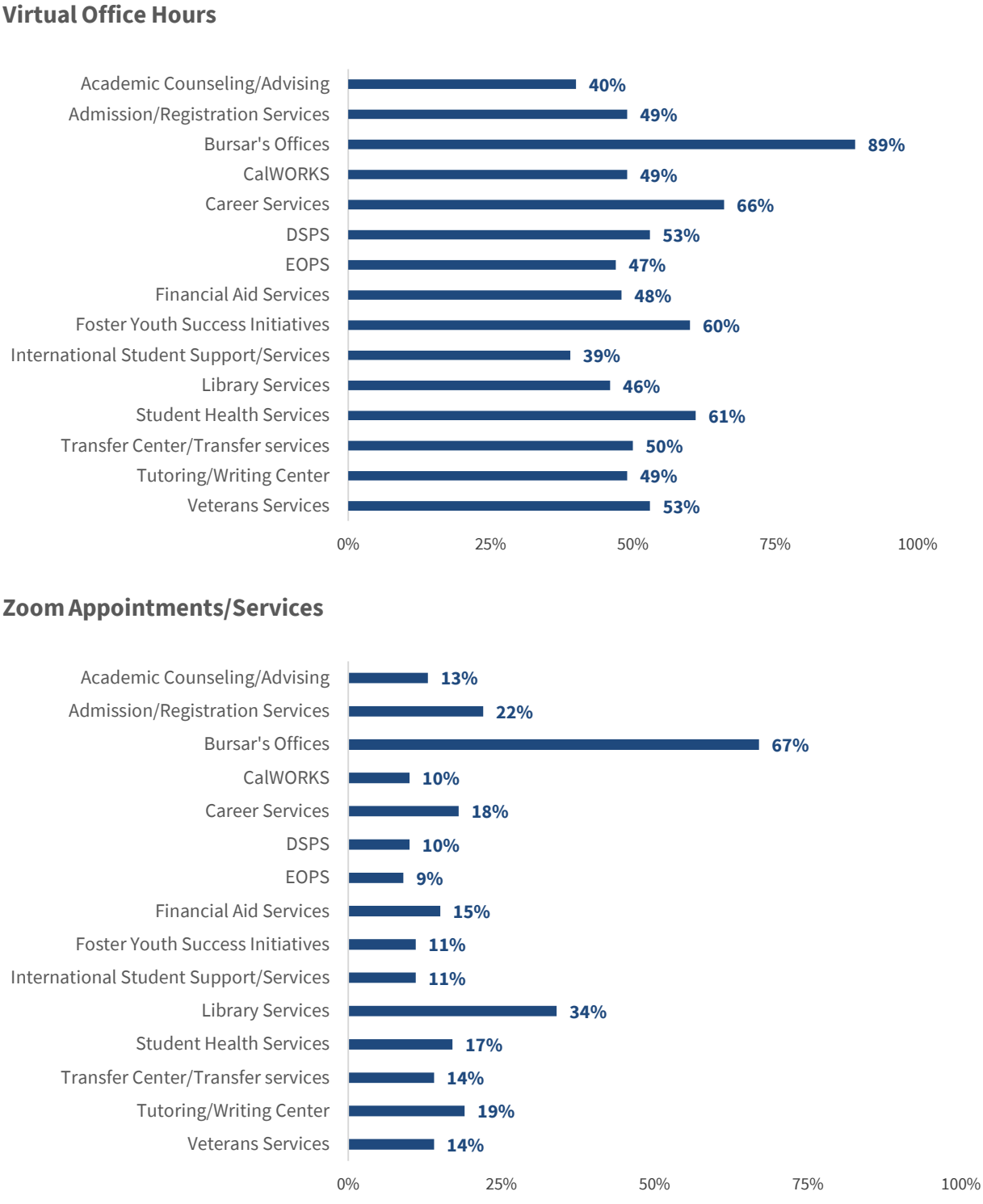


Figure 7b

Modalities of Support Offerings by Service Area – Virtual Office Hours and Zoom Appointments/Services

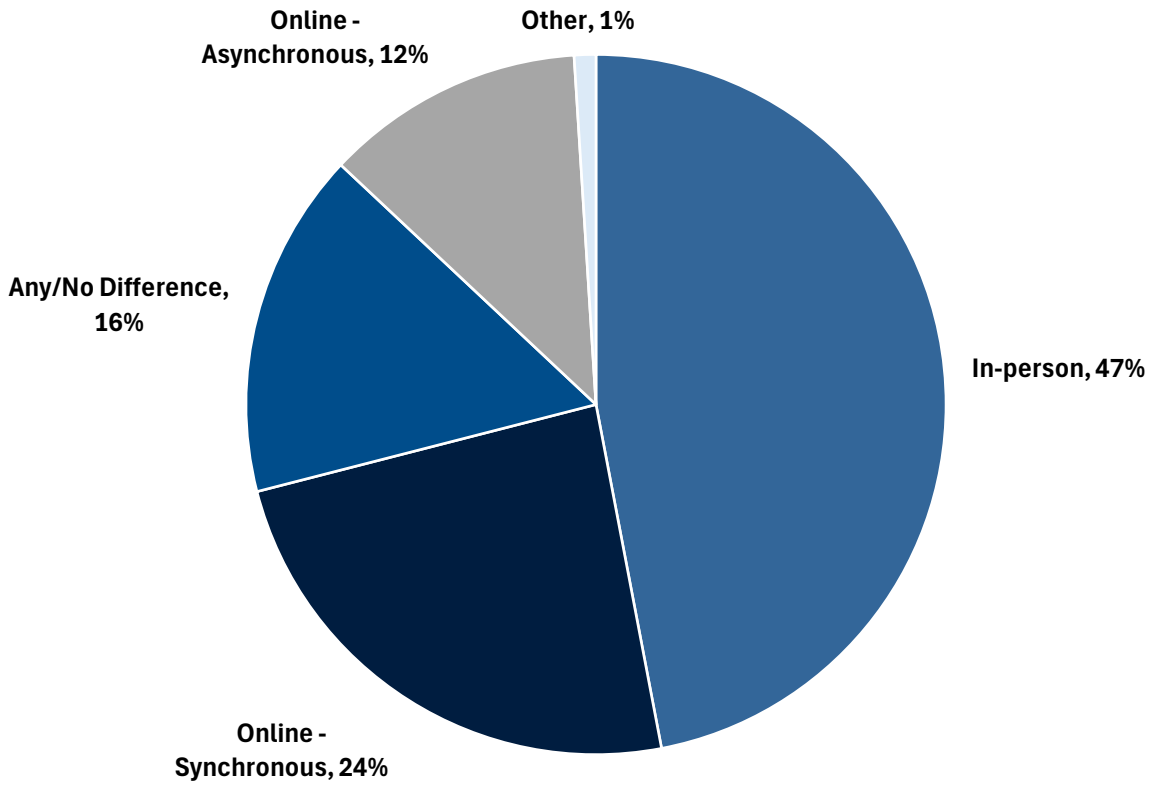


Student Experiences with Support Structures

Students taking online courses in the past year prefer in-person support services, as shown in Figure 8, with nearly half of survey respondents (47%) preferring this modality. Among the online modalities, students preferred online synchronous support formats, such as live chat functions, text messaging, or Zoom appointments, over online asynchronous support, such as (see Appendix E: Research Brief on Student Experiences of Online Education).

Figure 8

Preferred Modality for Accessing Student Support Services



When asked which services should have online/hybrid offerings, student survey respondents highlighted services that seem to prioritize students' well-being, including services that foster community and ensure equitable access to resources and technology (see Appendix E: Research Brief on Student Experiences of Online Education). For example, students mentioned more opportunities for social engagement through clubs and student organizations, and they made comments about expanded academic support services, including increased tutoring options, online resources, and coordinated study groups.

Additionally, students emphasized the need for improved access to library resources, such as extended hours and enhanced access to reserves. Furthermore, students expressed a strong need for enhanced support for basic needs, including housing, food security, and mental health services. Technology support was also a key concern, with students requesting 24/7 IT support, tutorials on basic computer skills, and improved accessibility for students with disabilities. Finally, students emphasized the importance of clear communication about student needs and resources, including flexible appointment scheduling for counseling and financial aid, and enhanced language support services.

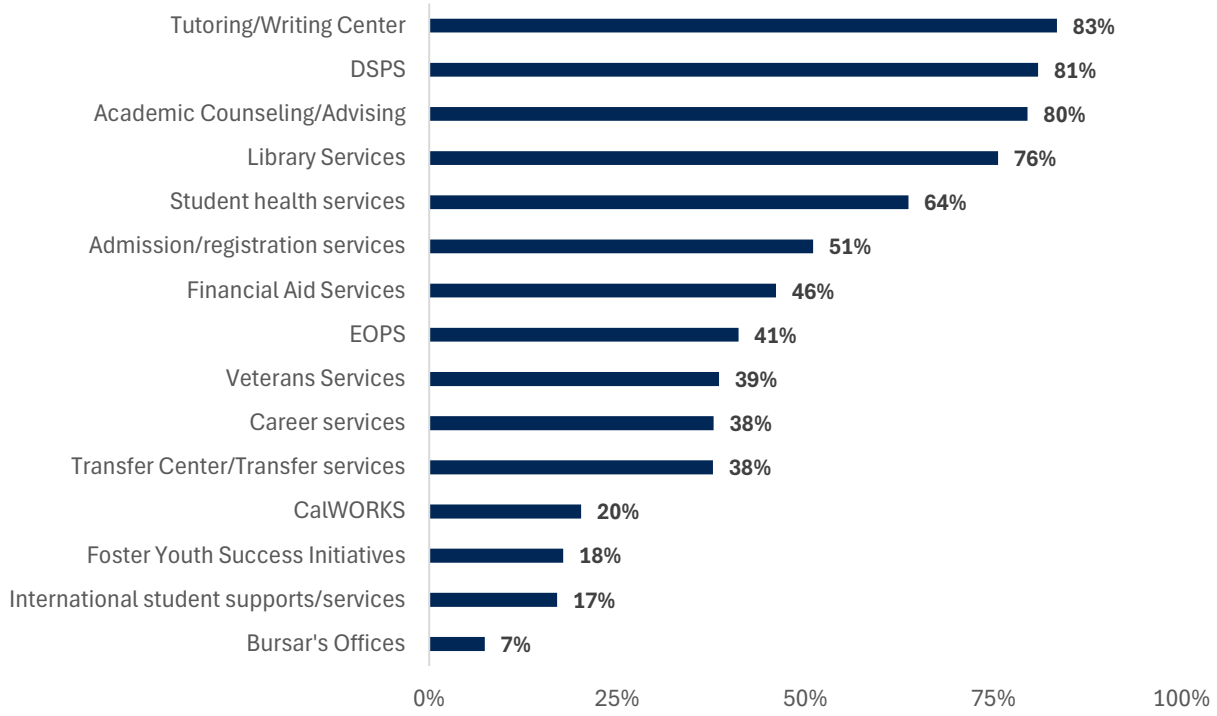
Navigating Support: Student Access to Campus Resources

Accessing Resources Through Faculty

Student support services survey findings indicate that faculty connect students to a wide range of support services within their online courses (see Appendix F: Research Brief on Faculty Experiences of Online Education). Tutoring/writing centers, Disabled Student Programs and Services (DSPS), and academic counseling/advising were most frequently cited (see Figure 9). While students commonly mentioned that faculty referred them to services like mental health, student health, and admission/registration, referrals to career services, transfer support, and services for specific student populations were less common. The most common method for connecting students to these services was by sharing the resources' web pages in the syllabus (81%).

Figure 9

Support Services Referrals by Faculty in Online Courses



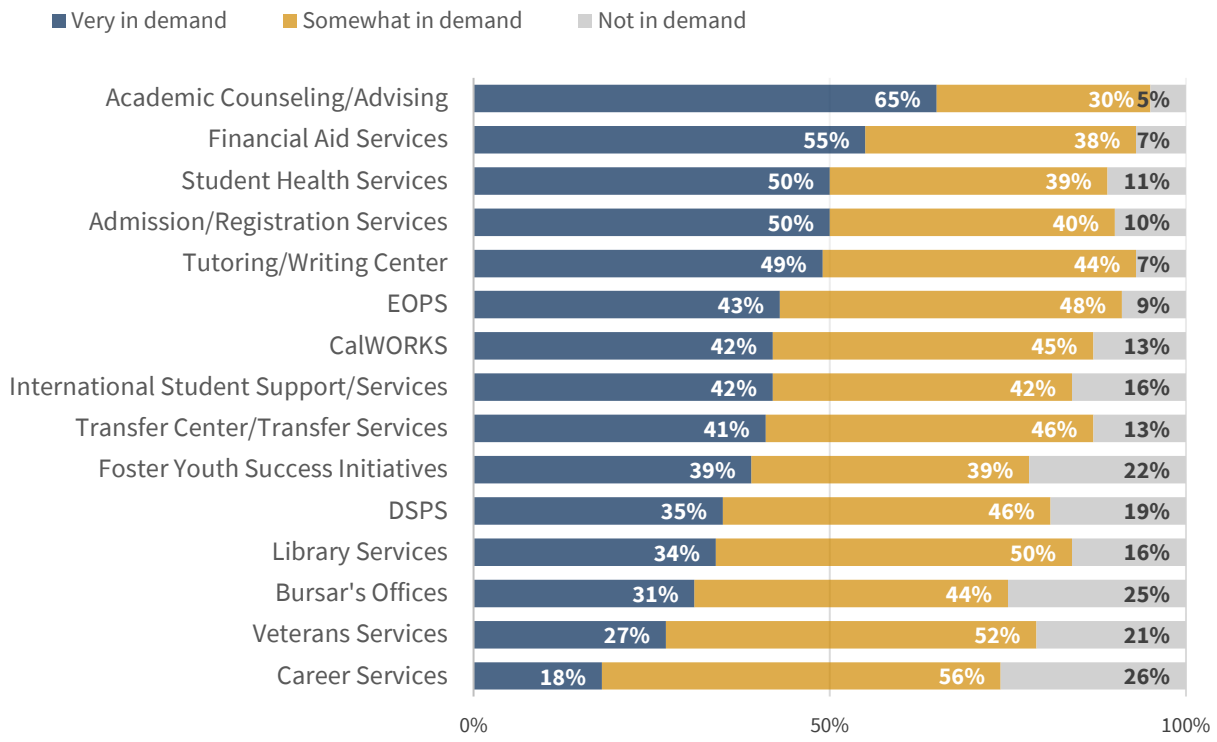
Accessing Resources Through Campus Websites and From Student Support Leads

When student support services leads were asked how they determine the scope and format of online student services, respondents from these colleges most often cited student demand (87%), the availability of technology and tools (70%), and staff availability and interest (54%) (see Appendix G: Research Brief on Student Support Services Lead Experiences and Online Offerings for more details on the findings from section).

Respondents indicated that Academic counseling/advising exhibits the highest demand, followed by financial aid, admission/registration, and student health services. Tutoring, writing centers, and specialized programs like Extended Opportunity Programs and Services (EOPS) and transfer centers appear to have moderate demand. While library services are widely used, the demand for specialized services like veteran programs and foster youth initiatives varies (see Figure 10).

Figure 10

Demand for Online Options by Student Support Services



Demand for Online Options by Student Support Service	Very in demand	Somewhat in demand	Not in demand
Academic Counseling/Advising	65%	30%	5%
Financial Aid Services	55%	38%	7%
Student Health Services	50%	39%	11%
Admission/Registration Services	50%	40%	10%
Tutoring/Writing Center	49%	44%	7%
EOPS	43%	48%	9%
CalWORKS	42%	45%	13%
International Student Support/Services	42%	42%	16%
Transfer Center/Transfer Services	41%	46%	13%
Foster Youth Success Initiatives	39%	39%	22%
DSPS	35%	46%	19%
Library Services	34%	50%	16%
Bursar's Offices	31%	44%	25%
Veterans Services	27%	52%	21%
Career Services	18%	56%	26%

Colleges employ a variety of strategies to market and communicate online student support services to students. Websites are the most prevalent channel (96%), followed closely by email (87%). Canvas and social media platforms are also widely utilized (78%) by colleges, recognizing the importance of reaching students where they are most active. Other common methods include orientation presentations (70%), classroom presentations by support staff (63%), and faculty announcements (59%). Brochures are used by nearly half of institutions (48%), while mobile applications are less frequently utilized (33%).

Staff capacity to offer the services online was reported to be the top challenge to providing support services to online learners, followed by the required technology to deliver specific services online—two reasons that likely reflect the reliance on technology to deliver synchronous and live support to students in an online environment.

Actionable Insight #4

The breadth and depth of online student support services available to students varies from college to college, as well as the student demand for these services.

Actionable Insight #5

Online offerings of student support services appear to be driven by both student demand and college capacity (i.e., staff, technology, etc.).

G. Are there best practices for online and hybrid course offerings, with proven results in student success and student equity, that can be taken to scale at community colleges?

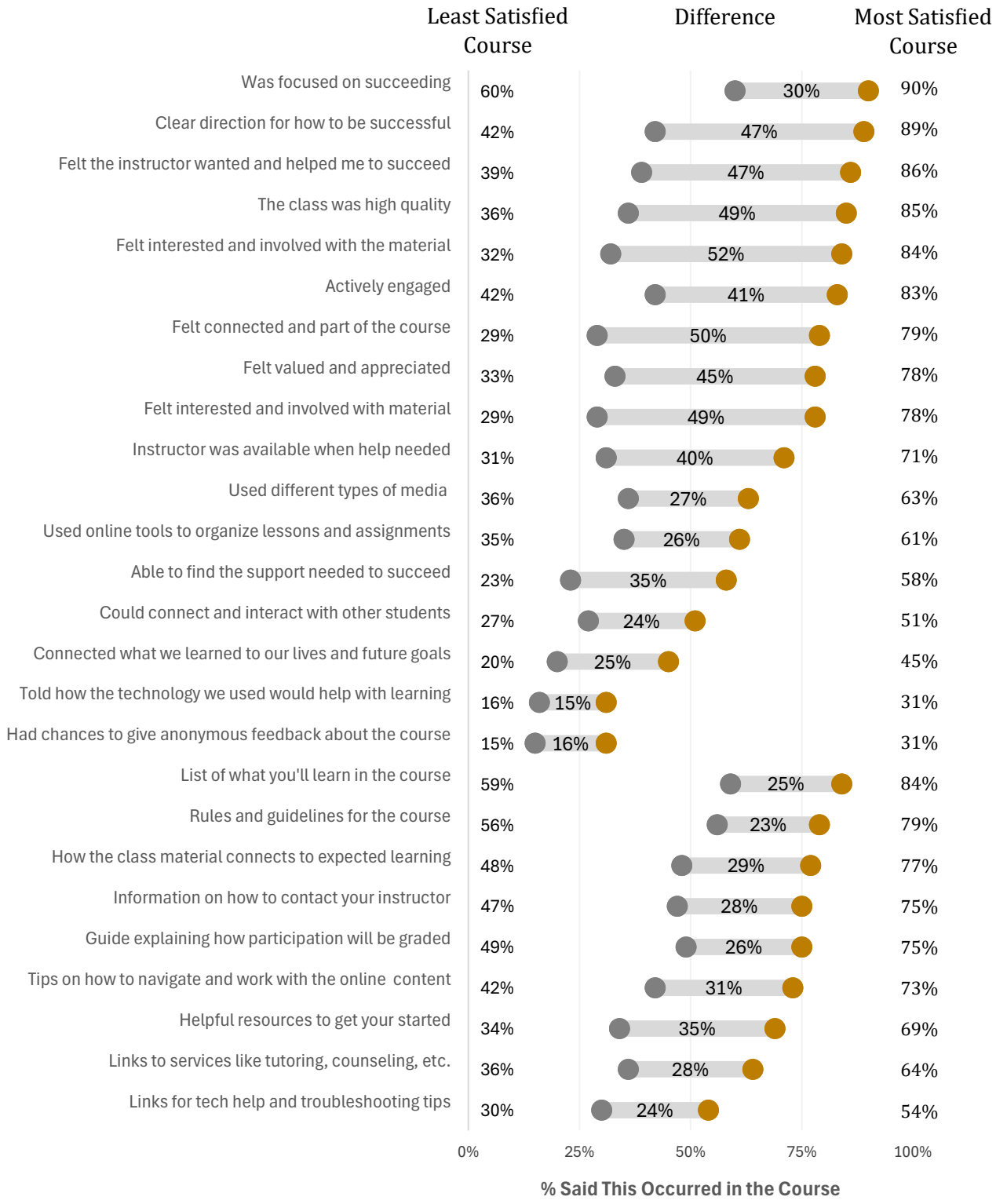
To obtain information about the best practices for online and hybrid course offerings, student feedback was gathered regarding the characteristics of their most and least satisfying online courses from the past year (see Appendix E: Research Brief on Student Experiences of Online Education).

Students who highly rated their online courses reported a significantly better experience when instructors provided clear guidance, referred to readily available resources, and demonstrated genuine care for student success (see Figure 11). Notably, the most highly-rated courses had instructors who provided a broader range of helpful resources at the beginning of the course, particularly those related to course orientation, technical support, and troubleshooting. Student engagement and interest were key factors in course satisfaction, as were strong personal

interactions with the instructor. Students in highly-rated courses felt more valued, appreciated, and supported by their instructors, perceiving a genuine interest in their success.

Figure 11

Experiences With Online Courses for Least and Most Satisfying Courses



Actionable Insight #6

Given the importance of instructor presence and engagement for students' online course satisfaction, investments in professional development opportunities for employing strategies to build stronger instructor-student relationships, providing clear guidance and support, and creating inclusive online learning environments are critical for creating more inclusive online learning environments.

H. Comparing the transferability to the University of California and the California State University of online and hybrid course offerings with their fully in-person counterparts, are there barriers to transfer from the community colleges to the University of California and the California State University based on course modality?

Based on the results from impact analyses conducted to understand the causal impact of online course-taking on transfer, the proportion of online courses a student attempts does not statistically predict whether a student transfers to a four-year university (see Appendix H: Research Brief of the Causal Effects of Online Course-Taking on Completion). These findings suggest that there do not appear to be barriers to transfer from community colleges to the University of California (UC) and California State University (CSU) systems based on the course modality. The UC and CSU systems do not identify course modality as a course feature that is considered in articulation decisions between segments.[11]

[11] According to the California Articulation Policies and Procedures Handbook - Spring 2013.

Discussion of Results and Recommendations

The COVID-19 pandemic dramatically accelerated the adoption of online learning in higher education. While online course enrollment was increasing prior to the pandemic, the shift to remote instruction was swift and widespread. Although the initial surge has subsided, online learning remains a dominant force in higher education, particularly within the CCC system with online course options being offered in similar proportions to traditional in-person course options across the system. Moreover, we are seeing narrowing of gaps in course completion rates between online and in-person closing over time, and across several student populations.

The results of this comprehensive study show that there are clear positive benefits to students' completion of a degree based on their online course-taking behaviors, with students who have attempted a higher percentage of online courses being more likely to complete a degree within four years than students who have not taken any online courses. While the effect of online course-taking was not significant for students' transfer outcomes, there was no statistically negative effect found with their likelihood to transfer based on their online course-taking behavior. These results suggest that online course modalities do not create barriers to transfer. However, interpretation of these results is complicated by coding inconsistencies in the systemwide data.

The results from this comprehensive study on online education in the CCC system reveal the following highlights:

Highlight 1: Online education definitions and reporting have not kept pace with the rapidly evolving changes in course modalities taking place in the system.

A review of the coding practices of districts and policy guidelines reveals inconsistencies in how online courses are defined and tracked within the CCC system. For example, the current data element (XF01) used to flag online courses is applied inconsistently across the system, leading to issues such as missing codes for online courses and misaligned coding between asynchronous and synchronous instruction. Furthermore, definitions for various forms of online education formats, such as hybrid learning, lack consistency or are absent from district policies. Curricular approval processes and instructor qualifications for online teaching also vary from district to district. These inconsistencies hinder data analysis and informed decision-making regarding online education within the CCC system.

Highlight 2: While virtual one-stop support services have been touted as a promising practice, only about a third of colleges are implementing them.

Despite the broad range of online support services available throughout the CCC system and its colleges, their depth and accessibility vary considerably. Moreover, marketing efforts for online support primarily focus on college websites, while underutilizing channels like social media and online applications that may better reach students. Furthermore, colleges face barriers such as staffing shortages, outdated technology, and American Disabilities Act (ADA) compliance issues that hinder the effective implementation and delivery of online support services.

Highlight 3: **Students' and faculty's online teaching and learning preferences and experiences are mixed.**

Students' online learning preferences and experiences vary significantly. Students lacking recent online experience often favor in-person classes and struggle with online learning, particularly with asynchronous formats. Conversely, students with online learning experience report higher satisfaction rates with courses that provide clear guidance, useful resources, and supportive instructors who demonstrate care for students. Faculty, regardless of their prior online teaching experience, generally prefer in-person instruction but have adapted to online and hybrid formats. They prioritize accessible and engaging online courses but face challenges with addressing bias and technology.

Highlight 4: Online course-taking facilitates degree completion but has no significant impact on transfer.

Online course sections have nearly tripled over the past decade. However, access to online courses is not equitable, with younger, Hispanic, non-female, disabled, and military students being less likely to enroll than other students. Additionally, online course offerings vary significantly across different programs and colleges. Despite these disparities, online course-taking has been shown to positively impact students' credit unit attainment and degree completion rates. While online course-taking may not positively impact transfer rates, there is no evidence to suggest a negative impact on students' ability to transfer to a university.

RECOMMENDATIONS

Based on the results of this comprehensive study, The RP Group offers the following recommendations for the CCC system to support its ongoing efforts for delivering quality online education for its students:

1. **Establish Clearer Definitions and Guidelines for Online Education to Improve Tracking and Reporting Efforts.**

    - **Develop and disseminate standardized definitions for key terms:** This recommendation includes defining terms such as "online course," "hybrid course," "hyflex course," "blended learning," "synchronous," "asynchronous," and "remote learning" to ensure consistent understanding and application across the CCC system in tracking and reporting.
    - **Update the Program and Course Approval Handbook to reflect current online education practices and definitions:** This recommendation will help ensure consistency and standardization in the evaluation and approval of online courses across the CCC system.
    - **Revise the COMIS Data Element (XF01) and separate instructional methods from modalities:** The current XF01 data element should be revised to distinguish between instructional methods (e.g., lecture, discussion, group work) and the modality of delivery (i.e., online, in-person, hybrid). This separation will allow for more accurate data collection and analysis of online learning trends and effectiveness.

2. **Invest in Robust Professional Development and Advanced Technology Infrastructure to Guarantee High-Quality Online Learning Experiences for All Students, Both Within and Beyond the Classroom.**

    - **Provide comprehensive faculty development:** Offer professional development opportunities focused on enhancing instructor-student engagement in online environments, integrating AI meaningfully into learning, and developing effective online teaching strategies.
    - **Actively connect students to support services:** Implement personalized guidance and standardized approaches to connect students with relevant support services, such as tutoring, counseling, and career services.
    - **Standardize the depth and accessibility of key support services:** Ensure consistent availability and quality of core services like academic counseling, tutoring, and career services across the CCC system.
    - **Support the development of comprehensive online platforms:** Integrate student support services, academic resources, and course information in a seamless and intuitive manner.

3. **Promote Ongoing Research and Evaluation.**

- **Conduct ongoing research and evaluation of online learning practices:** Ongoing research and evaluation will help to identify successes and areas for improvement, inform policy decisions, and ensure that online education continues to meet the evolving needs of students and institutions.

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APPENDIX A: Literature on Online Education

SUMMARY OF KEY FINDINGS

- Historically, female, Asian, and White students were more likely to access online courses, but recent changes to online instruction have shifted student preferences.
- The effect of online coursework on course success is mixed.
- Positive long-term outcomes are associated with online course-taking, including increased likelihood of graduation and transfer.

The 2020 global pandemic dramatically accelerated the growth of online education across all sectors, particularly in higher education, fundamentally reshaping its operations. The pandemic led institutions to expand online course offerings, a change that remained even after campuses reopened. IPEDS data reveal that in 2019, before the pandemic, 37% of college students nationwide took at least one online class. This number surged to 73% in 2020, at the height of pandemic restrictions. California saw an even more significant jump, from 31% to 76%. By 2023, online enrollment had decreased, but it still represented most college students—53% nationally and 56% in California (IPEDS, 2025). Post-pandemic, nearly every community college student and faculty member has had some experience with online teaching or learning.

Online education's dominance in the educational landscape has presented opportunities and challenges. Research on its impact indicates varying outcomes depending on student demographics and prior academic performance. This literature review aims to inform the California state legislature's inquiries into online education by examining current research on student outcomes in synchronous, asynchronous, and hybrid online learning models. Specifically, this paper will review research on the impact of online education on course success, persistence, and degree completion to inform future policy considerations for the California Community Colleges (CCC) system.

KEY FINDINGS

KEY FINDING #A1: Historically, female, Asian, and White students were more likely to access online courses, but recent changes to online instruction have shifted student preferences.

Due to its flexibility and accessibility, online education attracts diverse learners. It can provide access to education for those who cannot attend in-person courses. Some research shows that online learning appeals to working adults, busy individuals, people in remote locations who live far from higher education institutions, non-traditional students, and students with disabilities (e.g., Huntington-Klein et al., 2017; Xu & Jaggars, 2013). Other research has shown that online courses increase college access for nontraditional learners (e.g., students over 24 years old and single parents) and underserved students, such as students of color, low-income students, and first-generation students (Hachey et al., 2022). However, existing data on enrollment patterns present a mixed picture. Some studies indicate that historically underrepresented groups may be less likely to enroll in online courses compared to their peers (Johnson & Mejia, 2014). This section will delve into existing research and data to examine enrollment trends in online courses.

A 2018 study by Hart et al. examined the impact of online courses on California community college students. Analyzing data from first-time enrollees in the 2008–09 academic year, the researchers found that female, Asian, and White students were more likely to enroll in online courses. Students with at least one online course experience demonstrated positive outcomes, including a reduced need for remedial courses, increased transfer intent to four-year universities, higher GPAs, greater unit attempts in their initial term, and higher rates of financial aid receipt compared with their solely in-person counterparts. However, the data in this study are almost two decades old, and the demographics and experiences of online learners in community colleges have likely evolved significantly since then.

Johnson and Mejia (2014) also looked at enrollment data in the CCC system, examining ten years of data through the 2011–12 academic year. Similarly to Hart and his colleagues, Johnson and Mejia found that female, Asian, and White students were more likely to enroll in online courses, while Hispanic and male students were less likely. Moreover, they saw that since 2007–08, Black/African American students have been able to increase their access to online coursework and enroll at rates almost matching those of their White counterparts. Older students (age 25+) demonstrated higher online enrollment rates, likely due to work and family commitments. Huntington-Klein et al. (2017) further emphasized the preference for online courses among women, older students, and employed students, while students with limited English proficiency exhibited lower enrollment rates.

These enrollment trends may be influenced by the types of courses offered online. Research suggests that "gateway" courses (introductory courses in the subject) in English, math, business, and information technology are more likely to be available online than courses in the sciences and engineering, likely due to laboratory requirements, which are difficult to offer online (Johnson & Mejia, 2014). Furthermore, the availability of online courses varies significantly across institutions, with some colleges offering far more online options than others. In the CCC system, for example, the proportion of online credit enrollment offered at each college ranged from 0% to 60% in 2011–12

(Johnson & Mejia, 2014). More recent data show that the proportion of online courses is increasing (CCCCO, 2024).

According to the Chancellor's Office DataMart, in 2022–23, online enrollment ranged from 0% to 90%, with over half of colleges having 50% or more online enrollment. These differences in online scheduling practices can affect who enrolls in online courses and, subsequently, who is impacted by them.

The COVID-19 pandemic has likely shifted student preferences with approximately one-third of prospective and continuing CCC students prefering online learning modalities (The RP Group, 2024).

KEY FINDING #A2: The effect of online coursework on course success is mixed.

A key consideration in online education is whether student outcomes, such as course success and retention, are comparable to those in traditional, in-person settings. Research findings on this topic are mixed. This section will review the research on the impact of online education on course success and retention.

Course Success

Studies have yielded varying results regarding the impact of online learning on student success. Some research suggests potential drawbacks, with studies by Bettinger & Loeb (2017) and others finding lower grades, test scores, and pass rates in online courses compared to courses delivered through in-person instruction (Figlio et al., 2013; Johnson & Mejia, 2014; Xu & Xu, 2019). Studies focusing on California community colleges specifically showed lower pass rates for students in online courses (Hart et al., 2018; Johnson & Mejia, 2014). Johnson and Mejia (2014) observed significant gaps in successful course completion rates, with online students experiencing lower pass rates (by 11 to 14 percentage points), even after controlling for student characteristics.

Conversely, other studies have found no significant differences in student performance between online and in-person modalities. Hachey et al. (2022) note in their integrative review of the online course literature that studies that conducted meta-analyses and controlled for student factors, such as GPA, found no significant differences between modalities (e.g., Bernard et al., 2004; Driscoll et al., 2012; Zhao et al., 2005; as cited in Hachey et al., 2022).

While there may or may not be differences in course performance between in-person and online courses at the aggregate level, several studies have found that course modality may matter more at the individual level. For example, Bettinger and Loeb's (2017) study found that the adverse effects of online course-taking were concentrated in students with the lowest GPA. Other studies show evidence for disparities between modalities being more pronounced for Hispanic students, male students, and students with low grade point averages (GPA) (Figlio, et al., 2013; Xu & Xu, 2019), as well as for certain introductory courses in English and math (Xu & Jaggers, 2013; 2014). In the CCC system, evidence exists for performance gaps among Black/African American and Hispanic students, male students, students with lower GPAs and part-time students (Johnson & Mejia, 2014). Performance gaps were also evident between different subjects—health, physical sciences, and biological sciences exhibited lower performance gaps between online and in-person courses, while

media and communications, engineering, and public and protective services experienced some of the widest gaps (Johnson & Mejia, 2014).

Course Retention

Online learning retention refers to a student's ability to complete an online course (i.e., did not drop the course) and is a recognized challenge in online education, with studies showing dropout rates can be higher than in traditional in-person classes. Hart (2012) examines factors associated with students' ability to be retained in an online course. These factors include satisfaction with the learning experience, a sense of belonging to the learning community, motivation, peer and family support, time management skills, and increased communication with the instructor. Additionally, barriers to course retention included the decreased ability to process verbal information, lack of computer skills and computer accessibility, difficulty in accessing resources, and work and family demands.

A study by Huntington-Klein et al. (2017) investigated how online courses affected students' enrollment in subsequent courses within the same field. They found that community college students were less likely to continue in the field if they took an online course rather than a comparable in-person course. They further investigated the effects of online course-taking in five popular departments: English, mathematics, psychology, sociology, and communications. The study revealed that the influence of online courses differed across departments and was most pronounced in sociology and psychology.

KEY FINDING #A3: Positive long-term outcomes are associated with online course-taking, including increased likelihood of degree completion and transfer.

The impact of online course-taking on degree attainment and transfer is multifaceted. Online courses can accelerate student progress by offering flexibility that accommodates diverse schedules (Xu & Jaggers, 2013). Xu and Jaggers (2013) found that community college students in departments with greater online course availability graduated more quickly. Moreover, their research linked online course-taking to an increased likelihood of four-year college graduation.

Supporting these findings, a study by Fischer et al. (2022) demonstrated that online coursework positively influenced four-year graduation rates for university students and reduced the time-to-degree compared to traditional, in-person instruction. Johnson and Mejia (2014) observed positive long-term outcomes associated with online course-taking. Their research examined the impact of online courses on students' ability to transfer to a four-year university or earn an associate's degree. The findings revealed that students who enrolled in at least one online course were more likely to achieve these long-term goals compared to those who exclusively took in-person courses. This association was particularly strong for students who completed over 60 units at the community college.

The authors suggest that the flexibility of online courses may be particularly beneficial for students balancing school, work, and family responsibilities. The ability to maintain a full-time course load by incorporating one or two online courses per term could outweigh the potential for lower success rates in individual online courses. Moreover, online course options can expedite degree completion

or transfer by providing access to courses that may not be readily available in the traditional, in-person format.

CONCLUSION

Online education presents a valuable and flexible alternative to traditional classroom instruction, but it is crucial to recognize that it is not a universally suitable approach. Individualized learning styles, academic goals, and personal circumstances must be carefully considered when designing effective online learning curricula. The extent of online course integration, ranging from a few online courses to fully online degree programs, significantly influences the learning experience.

Student factors, such as learning styles and self-motivation, play a critical role in determining success within online learning environments. While research on the impact of online education on student outcomes has yielded mixed results, contemporary students appear to be more receptive to online learning modalities.

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APPENDIX B: Research Brief of Instructional Modality Code Comparisons with Schedule of Class Descriptions

KEY FINDINGS

- The current COMIS data element (XF01) used to flag online courses is being applied inconsistently across California community colleges.
- These inconsistencies include missing online codes for courses that appear to be scheduled as online and misaligned coding between asynchronous and synchronous instruction.

ACTIONABLE INSIGHTS

- Districts need clearer and consistent guidelines and definitions for online education.
- XF01 needs to separate instructional methods from modalities to keep up with ever-evolving technological and pedagogical practices.

As one part of a multi-part study commissioned by the Chancellor's Office, the Research and Planning Group for California Community Colleges (The RP Group) conducted a "course audit analysis" from a random sample of fall term course sections between 2020 and 2023 to better understand how California community colleges are coding their online course sections and how these courses can be identified within the Chancellor's Office Management Information Systems (COMIS) data element XF01, a field that describes the type of instructional method the course section is (see the Source Details section at the end). The purpose of this review was to better understand how colleges describe their online course offerings and how they code these courses with the COMIS XF01 code. Below are the key findings from this course audit.

KEY FINDING #B1: The current COMIS data element (XF01) used to flag online courses is being applied inconsistently across the CCC system.

After comparing the COMIS XF01 codes with the descriptions in the schedule of classes, we found that codes and descriptions were aligned (i.e., the description of the course section appearing to match the XF01 code description) for only 57% of the 1,119 sections sampled.

Missing Online Codes

Sixty percent (60%) of the misalignments were due to colleges only using XF01 codes that indicate whether a class is a lecture or lab (02/04), with no XF01 codes that indicate whether the course is or has an online component (71,72)—even though the schedule of classes describes the section as an entirely online course with no apparent in-person component.

These sections, therefore, appeared as in-person courses based on their XF01 codes. For example, at one college, multiple sessions of the same section were displayed in the schedule of classes (see Figure B1). This class section appears to include both lecture and lab components but is described as being delivered via distance education/online modalities (DE/ONLINE). One session of this section was scheduled on specific days/times, but the other session did not include these details. This class was coded as 02 and 04 (lecture and lab) but did not include any of the distance education codes (71 or 72). Therefore, based on COMIS data, we would miss flagging this course in the data as an online class.

Figure B1

Schedule Listing for Course Delivered via Distance Education/Online

80253	ESL 063	4 Units	CR	High Intermediate ESL: Writing and Grammar	MW	08:10am-10:00am	DE/ONLINE	Lec
80253	ESL 063	4 Units	CR	High Intermediate ESL: Writing and Grammar			DE/ONLINE	Lab

Several other colleges displayed instances where their schedules of classes described courses with "online lecture" at a scheduled day/time or "online lab" on a scheduled day/time (e.g., "11:00 am-12:15 pm online"), but were coded using only 02 or 04 (lecture or lab). For example, one college used nuanced designations for online/hybrid courses (e.g., Online, Online - LIVE, Synchronous - LIVE, Online with Orientation). See Figure B2.

Figure B2

Schedule Listing for Course with Nuanced Modality Designations

CHLD	- Child Development-		Synchronous Live (Hybrid Flex)		
Status	Crn	Cred	Meeting Time	Date	Location
Completed	17260	3.0	T 06:10pm - 07:00pm	10/18-10/18	Education Building E72B
			T 06:10pm - 07:00pm	10/18-10/18	Online LIVE
			Online	10/18-12/16	Online
Completed	17282	3.0	M 06:10pm - 07:00pm	10/17-10/17	Online LIVE
			M 06:10pm - 07:00pm	10/17-10/17	Education Building E37
			Online	10/17-12/16	Online

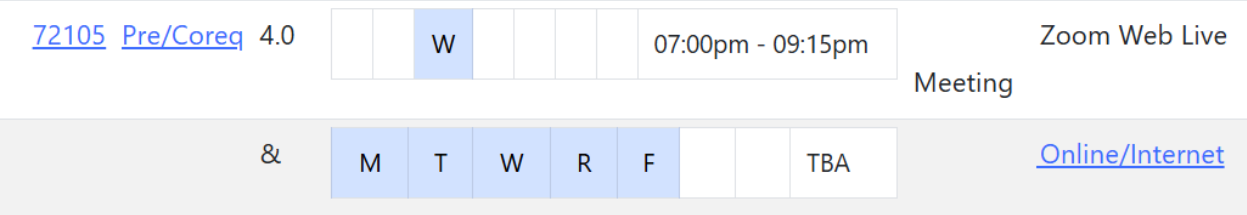
Synchronous and Asynchronous Online Codes

Slightly less than a third (31%) of misalignments involved instances in which online codes did not coincide with how the course was scheduled. These misalignments mostly occurred because courses were coded as asynchronous (72) when the schedule of classes included a set time to meet. Twenty-one colleges were incongruent with these codes for at least one section, but 11 colleges accounted for most of these misalignments. For example, one college listed their CD 110 course as "Online SYNC" and had a fixed day and time in the catalog, but XF01 was coded with a 72 (asynchronous).

Other instances when the schedule of classes' descriptions of courses were not aligned with MIS code definitions using the synchronous/asynchronous codes involved not including one of the codes when both were used. For instance, one college listed an English course with a set day and time and indicated it met via "Zoom web live meeting" with some additional unscheduled online portions (see Figure B3). This section only included code 72 (asynchronous), but not the 71 (synchronous) code to align with the set time and day scheduled.

Figure B3

Schedule of Classes Listing for an English Course With Synchronous and Asynchronous Components



CONCLUSION

This course audit, which involved looking at different sections from various colleges, revealed some common patterns. Overall, we found that online sections are not being coded consistently across colleges and even across terms within the same college. There appear to be inconsistent coding practices for in-person, online, and hybrid courses across colleges. Coding misalignments have also been observed among departments within colleges and across different terms, suggesting a lack of standardized coding protocols.

Additionally, there is uncertainty regarding the appropriate use of codes 02 and 04 (lecture and lab). It is unclear if these codes apply solely to in-person courses or if lecture and lab can be applied to online formats as well. Given the frequent coding inconsistencies identified, it is likely that most colleges are coding instructional methods and course modalities separately. The concepts of instructional methods and modalities are being conflated in XF01 and may be part of the reason why there are inconsistencies in college coding.

ACTIONABLE INSIGHTS

Based on these findings, there appears to be an inconsistent application of the XF01 codes within the colleges in this sample. These inconsistencies raise serious concerns about the reliability of research on online education's impact and efficacy at the local and state levels. Furthermore, these inconsistencies may distort funding formulas based on course delivery models, potentially leading to inequitable resource distribution. In reviewing the inconsistencies, there appears to be a conflation of instructional method, how a course is taught (e.g., lecture or lab), and in what modality the course is taught (e.g., online synchronous or two-way communication). The following actionable insights are offered to the Chancellor's Office as methods to remedy coding inconsistencies and increase clarity and transparency around how courses are coded and funded to improve future reporting and analysis of online courses.

ACTIONABLE INSIGHT #B1: Districts need clearer and more consistent guidelines and definitions for online education. To improve XF01 code reporting, colleges should be provided with more specific guidelines on how to apply the existing definitions to in-person, online, and hybrid courses. Clearer definitions and criteria for each course type should be outlined, including which XF01 codes are appropriate for each. By standardizing these definitions and reporting practices, future reporting and data analyses of online course offerings will be more reliable.

Moreover, the Chancellor's Office may consider using modern-day examples (e.g., Zoom, Canvas, online class with in-person exam) for how definitions should be applied and guidance around whether the codes should be applied based on a one-to-one method (one code per section) or a many-to-one method (many codes per section). Clarity around at least two areas will ensure greater consistency in coding within and across college districts to support local and statewide analyses.

ACTIONABLE INSIGHT #B2: XF01 needs to separate instructional method from modality to keep up with the ever-evolving technological and pedagogical practices. To improve XF01 data collection and reporting, XF01 could be restructured to separate indicators of instructional method and instructional modality. A clear delineation and separation will prevent the overlap of definitions and

provide greater flexibility in data collection and reporting practices to changes that may take place in either or both technological advances or pedagogical methods/practices. It is likely that how students receive their education will change in the future, and any modifications made to COMIS data elements should keep up with these changes.

SOURCE DETAILS

To conduct the course audit analysis, The RP Group created a random list of course-section level information for a random sample of 30 colleges for their fall term course offerings between 2020 and 2023. This list included the course title, section number, and the instructional method code (XF01) reported for those sections. To audit the XF01 codes, we gathered the schedule of classes for these colleges during these periods and compared the description of the course against the XF01 code reported for these sections. From each college, approximately 10–43 randomly selected sections were used based on keyword searches for online/internet class sections across different programmatic areas in the schedule of classes. In total, 1,119 sections were reviewed.

APPENDIX C: Research Brief of Distance Education Policy Scans

KEY FINDINGS

- The most common definition of online education includes references to the use of technology to facilitate regular and substantive contact between the instructor and students in different locations.
- Definitions for various forms of online education such as hybrid and hyflex are not consistently defined (or, in some cases defined all) in districts' policies. In most cases, online education explicitly excludes "correspondence education."
- Curricular approval processes and instructor qualifications for online teaching vary from district to district.

ACTIONABLE INSIGHTS

Update the state Program and Course Approval Handbook (PCAH) to include clearer distance education/online education definitions and guidance for how instructional modalities are factored into the course and program approval process to create more standardized expectations of online education at the district/local level.

In fall 2024, a California Community Colleges (CCC) distance education scan was conducted to explore the types of distance education policies CCC districts had to support their online education efforts. Under California Code Regulations, Title 5, § 55000.5), the Chancellor's Office (CO) is required to maintain and distribute a community college program and course approval handbook for colleges called the Program and Course Approval Handbook (PCAH), a handbook that many districts use as their "North Star" for curricular approval processes for programs and courses offered. To understand how online education is defined and offered at the state and local level, we conducted a web search of policies and procedures for all 73 CCC districts (CCCDs).

Based on this web search, we found district policies and/or guidelines for all 73 CCCDs, with nearly all of these policies and guidelines referencing federal regulations and guidelines for distance education under Title V Section 55202, which are also referenced in the state's PCAH.

In reviewing these policies and guidelines, three key findings emerged:

KEY FINDING #C1: The most common definition of online education includes references to the use of technology to facilitate regular and substantive contact between the instructor and students in different locations.

While the level of specificity in the definition varies from district to district, there is relative consistency in how districts define online education, commonly describing the use of technology to facilitate regular and substantive contact and interaction between the instructor and the students. Some policies are very specific with the percentage of time of instruction via online or in-person specified (e.g., 100% of the instruction time is online), or with specific technologies identified (e.g., the internet, audio conference). In comparison to the PCAH, these policies provide more detail about how online education is operationalized at the local level.

KEY FINDING #C2: Definitions for the various forms of online education such as hybrid are not consistently defined (or, in some cases, defined at all) in district policies.

Not all districts reference or provide guidelines for the different forms or combinations of instructional modalities (i.e., hybrid). Only about a third of the districts provide definitions of hybrid or blended forms of modality for instruction, with the level of specificity in the definition also varying. Of the 25 districts with definitions for hybrid, most describe hybrid courses as those that include both an online and in-person component, with most using the label or term "hybrid." Other terms used to describe the mix of online and in-person modalities include "blended learning" or "partially online." Where the definitions of hybrid vary, it was in terms of which aspect of the learning experience constitutes hybrid—some districts reference whether the "instructional time" blended online and in-person components, while others suggested that any online course that requires students to attend any class orientations, assessments, or tests in person is considered hybrid.

KEY FINDING #C3: Curricular approval processes and instructor qualifications for online teaching vary from district to district.

There are no consistent curricular approval processes or instructor qualifications for online education. The vast majority of districts do not appear to require any additional training or experience with teaching online. For districts that do require additional training or experience, the types of training reported include a focus on digital literacy, demonstration of competency in using the respective institutions' learning management system (LMS), training in online pedagogy, and—in some cases—training and certification pertaining to online equity considerations and American Disability Act (ADA) compliance.

About 40% of the districts (31 out of 74) require additional instructional qualifications to teach online courses, with some requiring formal training, professional development, and/or certification through the district's internal professional development programming.

CONCLUSION

While the state has outlined general curricular guidelines regarding distance education in the PCAH, there is not enough information in the handbook to guide districts on how distance education and online education are developed and implemented at the local level. This lack of clear guidance may be why definitions and standards vary from district to district in terms of how online education is defined, and what the curricular and instructor experience expectations are. Based on this review of the existing local and state policies, the following actionable insight is offered to create more standard practices and processes implemented by districts, and greater transparency around curricular and instructor expectations for teaching online courses.

Based on a review of districts' policies, the following is an actionable step that can be taken to promote quality online teaching and learning in the CCC system.

ACTIONABLE INSIGHTS

ACTIONABLE INSIGHT #C1: Update the PCAH to include clearer distance education/online education definitions and guidance for how instructional modalities are factored into the course and program approval process.

SOURCE DETAILS

This analysis used a collation of publicly available policy webpages or files from a scan of websites for all 73 California community college districts (CCCDs). Of the 73 CCCDs, all but one district had formal policies on their websites. For this review, we focused on identifying whether districts had definitions for online education, hybrid, substantive and regular contact, curricular standards, and/or any additional instructor qualifications for online teaching.

APPENDIX D: Research Brief on Statewide California Community College Trends on Online Education Between 2013 and 2023

KEY FINDINGS

- Online course sections have increased nearly threefold over the past 10 years.
- Online offerings are not evenly offered across different programs or colleges.
- Younger, Hispanic, non-female, disabled, and military students are less likely to enroll in online coursework.
- Course performance gaps between in-person and online courses have narrowed over time overall but remained for some marginalized populations.

ACTIONABLE INSIGHTS

Analyze course offerings and outcomes across different programs and colleges to identify disparities and potential promising practices that can ensure equitable access to online learning opportunities for all students.

- Continue to monitor and address any remaining performance gaps between in-person and online courses, particularly for marginalized student populations.

This brief summarizes a statewide analysis of California community college online course offerings. It examines online course availability, disaggregated by modality, and includes enrollment and course success rates. The data are broken down by college, program (using taxonomy of program [TOP] codes), and student characteristics such as race/ethnicity, sexual orientation, gender identity, age, and other relevant factors.

The analysis seeks to understand where robust online course options exist, which student populations are more or less likely to enroll online, course outcome rates (completion, withdrawal) across various student characteristics (e.g., race/ethnicity), and in which online courses/programs gaps are narrowing for specific student groups (e.g., Black/African American, Hispanic).

KEY FINDING #D1: Online course sections have increased nearly threefold over the past 10 years.

Online course offerings saw substantial growth between 2013 and 2023, rising from 12% to 48% of credit sections, even though the total number of sections remained relatively stable (Table D1). This growth was primarily driven by a 306% increase in asynchronous courses. Synchronous courses also saw significant growth, increasing by 261%. Hybrid courses, available since 2013, also increased by 171%, but consistently comprised less than 10% of all course modalities.

Table D1

Statewide Proportion (%) of Credit Section Offerings by Modality: Academic Years 2013–2023

Academic Year	Total Sections	Face to Face	Internet (Async/ Sync)	Internet Async	Internet Sync	Hybrid	Distance Education	Any Online Modality
2013	337,632	84.6	12.0	11.0	1.0	2.2	0.5	12.5
2014	351,507	84.1	12.6	11.6	1.0	2.1	0.5	13.1
2015	359,869	83.2	13.5	12.5	1.1	2.1	0.5	14.0
2016	364,869	82.1	14.7	13.7	1.1	2.3	0.6	15.2
2017	363,678	80.5	16.3	15.2	1.0	2.3	0.5	16.8
2018	363,308	78.5	18.2	17.1	1.1	2.6	0.5	18.7
2019	357,269	76.1	20.9	19.7	1.2	2.6	0.4	21.3
2020	321,932	36.7	60.1	51.9	9.6	3.0	0.3	60.3
2021	325,164	37.2	58.4	50.4	9.4	4.9	0.5	58.7
2022	325,449	47.4	48.6	44.5	4.8	5.7	0.4	48.9
2023	340,882	49.1	47.7	44.8	3.5	6.0	0.3	47.9
10-year Average	346,505	67.2	29.4	26.6	3.2	3.3	0.5	29.8
2023 - 2013 % Change	1%	-42%	298%	306%	261%	171%	-35%	284%

Note: Distance education involves instruction where instructors and students are separated by time and/or distance, utilizing technology for interaction, which includes courses coded 50 through 54.

KEY FINDING #D2: Online offerings are not evenly offered across different programs or colleges.

A review of the online course offerings by the taxonomy of program (TOP) codes at the two-digit level shows that the programs with the largest increases from 2013 to 2023 in online offerings (any online modality) were mostly in the lab-heavy and technical-skills, trade-focused programs such as Architecture (02), Engineering and Industrial Technologies (09), Commercial Services (30), Agriculture and Natural Resources (01), and Physical Science (19) (Table D2). The programs with the most consistently robust online offerings are Information Technology (07), Business and Management (05), and Library Science (16).

Table D2

Total Online Credit Section Offerings by 2-digit TOP: Academic Years 2013–2023

TOP Code	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023-2013 Change
01 - Agriculture	4.3	4.5	4.7	5.3	5.5	6.2	7.2	47.4	36.1	28.9	29.5	586%
02 - Architecture	3.9	3.6	3.8	4.8	5.1	5.1	6.7	58.9	62.1	49.0	46.5	1090%
03 - Environmental Sciences	10.5	11.6	11.1	12.7	13.4	15.1	21.8	57.6	56.3	50.2	47.9	358%
04 - Biological Sciences	6.5	7.2	7.7	8.2	9.0	8.5	9.3	56.0	58.3	40.4	38.8	492%
05 - Business & Management	32.8	35.0	37.8	40.4	43.5	47.3	51.2	78.0	77.2	74.9	75.3	130%
06 - Media & Communications	15.7	16.7	17.4	18.1	20.0	22.1	25.2	64.9	64.9	56.6	55.2	251%
07 - Information Technology	42.9	43.7	45.5	48.2	49.7	51.6	53.6	77.6	78.6	76.8	77.1	80%
08 - Education	6.1	6.4	6.9	7.3	8.2	9.1	11.1	54.9	40.9	32.1	31.8	420%
09 - Engineering	2.9	2.7	2.5	2.8	2.9	3.8	4.9	31.8	24.7	17.4	16.8	476%
10 - Fine & Applied Arts	6.2	6.5	6.9	8.0	9.4	10.8	12.2	55.7	45.6	34.1	32.3	424%
11 - Foreign Language	13.2	13.6	14.9	14.5	15.8	19.7	24.3	65.9	73.0	68.3	68.6	421%
12 - Health	5.4	5.7	6.9	8.0	9.3	10.4	12.1	41.3	36.3	27.2	27.5	412%
13 - Family & Consumer Science	15.2	16.7	18.2	21.1	24.0	26.0	30.1	67.4	68.5	60.4	60.2	296%
14 - Law	13.3	16.5	17.8	20.8	21.7	22.3	29.2	65.6	67.0	62.2	66.4	400%
15 - Humanities	10.6	11.1	12.0	13.6	15.7	18.4	23.2	68.3	71.7	61.0	59.4	459%
16 - Library Sciences	56.1	61.2	62.1	64.2	74.0	77.7	81.4	92.2	91.4	91.6	90.0	61%

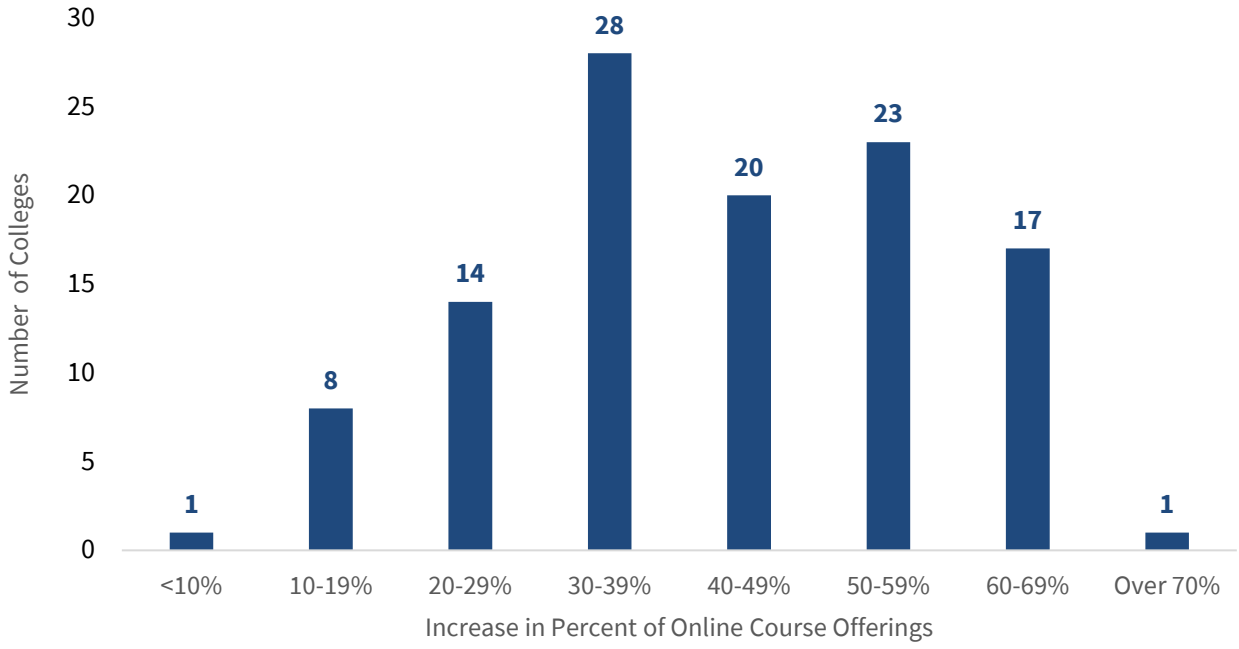
17 - Mathematics	9.5	9.8	10.4	10.9	11.2	12.4	13.4	56.4	60.3	45.7	42.1	342%
18 - Military Studies								33.3	14.8		5.6	-
19 - Physical Sciences	4.7	4.9	5.1	5.8	6.5	7.4	9.1	54.1	53.9	34.7	33.2	599%
20 - Psychology	19.4	20.5	22.5	24.6	27.0	29.6	33.3	73.7	76.6	67.3	67.3	247%
21 - Public & Protective Services	8.5	8.6	9.6	10.1	11.1	17.4	17.6	36.7	34.3	30.1	29.2	243%
22 - Social Sciences	18.8	20.8	22.8	25.2	28.4	31.3	35.4	73.7	75.7	67.6	67.8	260%
30 - Commercial Services	3.8	4.0	3.9	3.8	3.2	4.0	4.8	29.3	37.9	27.1	29.5	681%
49 - Interdisciplinary Studies	8.0	8.6	9.4	10.3	11.8	13.2	16.0	56.7	63.7	54.3	52.1	549%

Note: Percent changes highlighted in blue show the TOP 2 areas with at least a 400% increase.

A review of online course offerings statewide revealed variations across colleges. Figure D1 illustrates the percentage of online credit courses compared to total credit courses across institutions in 2013 and 2023. In 2013, the statewide average for online offerings was 15%, ranging from 0% to 57%, and by 2023, the average had risen to 57%, with a range of 0% to 92% (excluding Calbright College, a fully online institution). Most CCCs increased their online course offerings by 30 percentage points, with 28 colleges increasing it by 30-39 percentage points, and 17 by 60-69 percentage points, and one college increasing over 70 percentage points between 2013 and 2023.

Figure D1

Percentage of Online Course Offerings by College: 2013 and 2023



KEY FINDING #D3: Younger, Hispanic, non-female, disabled, and military students are less likely to enroll in online coursework.

Online enrollment over the past 10 years has varied among different student groups (see Table D3 and Figure D2). In 2013, a fifth of enrollments for older students were taken online, while less than 10% of enrollments for students less than 19 years old were online. Currently, the youngest (less than 19) and oldest students (over 50) are now less likely to enroll in online coursework, while students between the ages of 25 and 50 are more likely to enroll in online courses.

Enrollment in online courses did not differ significantly among different ethnic/racial groups pre-pandemic, although Hispanic students were slightly less likely to enroll online. Post-pandemic (in 2023), Pacific Islander/Hawaiian Native and American Indian/Alaska Native students were the least likely to enroll in online courses.

Female students are more likely than non-female students to enroll in online courses, a trend that has remained consistent over the past 10 years. Finally, among special student populations, the trend of who enrolls in online courses has shifted over the past 10 years. Ten years ago, veterans and military students were the most likely to enroll online, while Disabled Student Programs and Services (DSPS) students were the least likely. Currently, DSPS students are still the least likely to enroll in online courses, whereas low-income, foster youth, and first-generation students now enroll in online courses at the highest rates.

Table D3

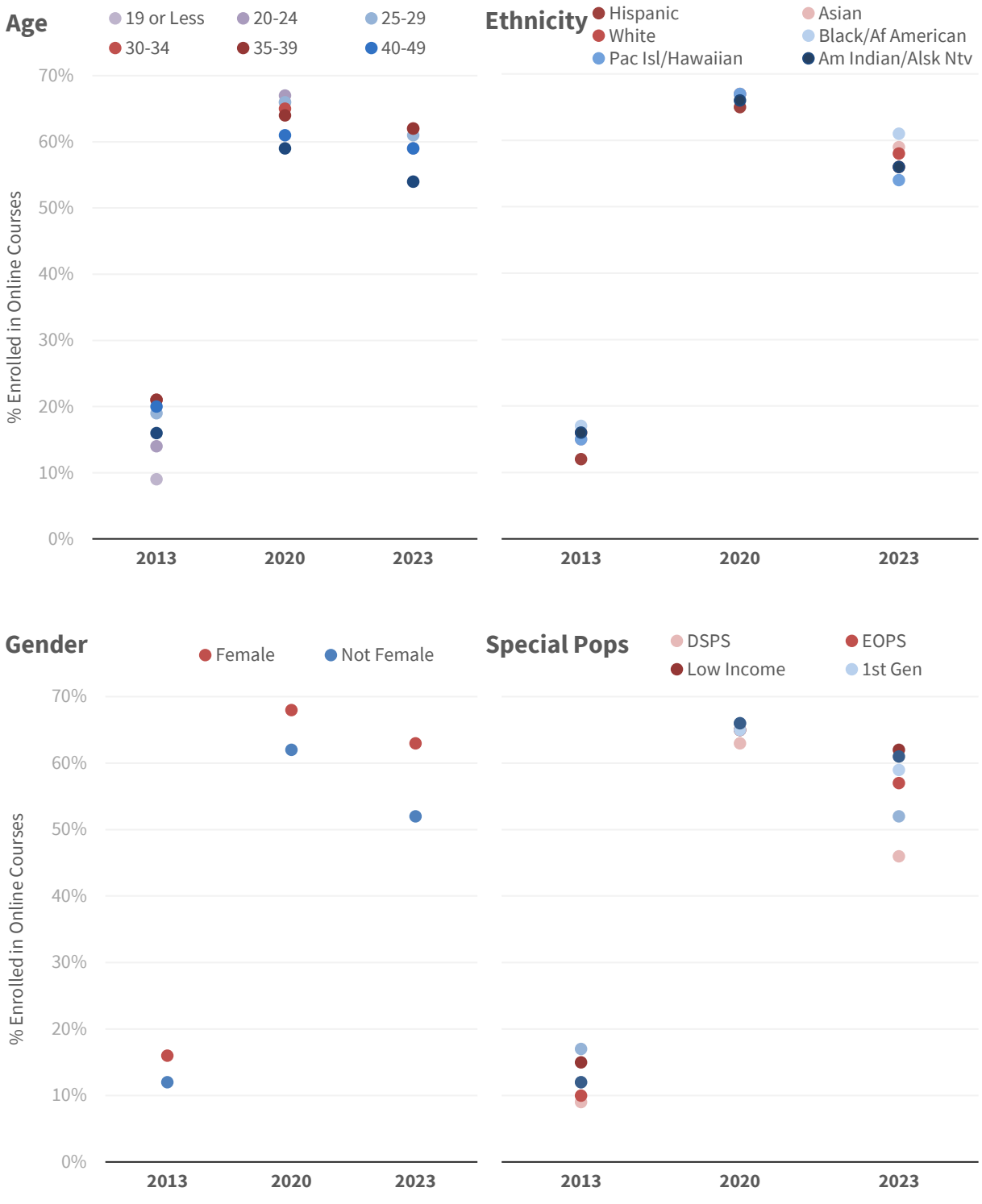
Share of Online Coursework for Each Student Subgroup: Academic Years 2013–2023

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
All Students	14%	15%	17%	19%	21%	23%	27%	66%	69%	59%	58%
Age											
19 or Less	9%	10%	11%	13%	15%	18%	21%	66%	68%	55%	54%
20-24	14%	15%	17%	19%	22%	25%	28%	67%	71%	61%	59%
25-29	19%	21%	22%	24%	26%	29%	33%	66%	71%	63%	61%
30-34	21%	23%	24%	26%	28%	31%	35%	65%	70%	63%	62%
35-39	21%	23%	24%	26%	28%	30%	35%	64%	69%	63%	62%
40-49	20%	21%	22%	24%	26%	28%	32%	61%	65%	61%	59%
50 or More	16%	17%	18%	19%	21%	22%	26%	59%	62%	57%	54%
Ethnicity/ Race											
American Indian/ Alaska Native	16%	17%	18%	20%	22%	24%	27%	66%	69%	58%	56%

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Asian	15%	16%	18%	20%	22%	25%	29%	67%	71%	61%	59%
Black/African American	17%	18%	20%	22%	24%	26%	30%	67%	72%	63%	61%
Hispanic	12%	13%	14%	16%	18%	21%	24%	65%	68%	58%	56%
Pacific Islander/ Hawaiian Native	15%	16%	18%	20%	22%	25%	28%	67%	70%	57%	54%
White	16%	18%	19%	21%	23%	26%	29%	67%	70%	60%	58%
Gender											
Female	16%	18%	19%	22%	24%	27%	31%	68%	74%	64%	63%
Not Female	12%	13%	14%	15%	17%	19%	22%	62%	64%	53%	52%
Special Populations											
DSPS	9%	10%	11%	12%	14%	16%	18%	63%	64%	50%	46%
EOPS	10%	11%	12%	14%	16%	18%	22%	65%	71%	61%	57%
First Generation	12%	13%	15%	18%	20%	23%	26%	65%	71%	61%	59%
Foster Youth	12%	14%	15%	17%	19%	24%	26%	66%	70%	64%	61%
Low Income	15%	16%	18%	20%	22%	25%	29%	65%	73%	64%	62%
Vet/Military	17%	16%	18%	20%	23%	25%	28%	66%	66%	53%	52%

Figure D2

Online Enrollment by Student Demographics for 2013, 2020, and 2023



KEY FINDING #D4: Course performance gaps between in-person and online courses have narrowed over time overall but remained for some marginalized populations.

Over the last decade, online course enrollment has grown substantially. While online course success rates have also improved from 64% to 75%, they still lag behind those of in-person courses (72% to 79% respectively). However, the performance gap between the two modalities has narrowed over this period (see Table D4).

Table D4

Comparison of Success Rates between In-Person and Online Courses: Academic Years 2013–2023

Academic Year	% of Students Enrolled in Credit Online Courses	Average Online Course Success Rate	Difference in Success Rates (Online - F2F Courses)
2013	14%	64%	-8
2014	15%	64%	-8
2015	17%	66%	-7
2016	19%	68%	-6
2017	21%	70%	-4
2018	23%	71%	-4
2019	27%	72%	-1
2020	66%	73%	-2
2021	69%	71%	-6
2022	59%	71%	-5
2023	58%	75%	-4
Total	**39%**	**71%**	**-3**

Table D5 shows success rates for various student groups, revealing performance disparities. While all groups saw increased success rates over the last 10 years, noticeable gaps in completion are observed for students between the ages of 30-49 years old, Black/African American students, Pacific Islander/Hawaiian Native students, and foster youth students.

Figure D3 illustrates the difference between online and in-person course success rates. Only the

youngest student group (19 or younger) performed better in online courses than in in-person courses. The data also indicate significant success gaps between modalities for students 30+ years and older, Black/African American students, Pacific Islander/Hawaiian Native students, American Indian/Alaska Native students, veteran/military students, low-income students, and foster youth students.

Results showed that Black/African American, American Indian/Alaska Native, and older students (30+ years) experienced larger performance gaps between in-person and online course success. However, trends show that these gaps have narrowed over the past 10 years.

Table D5

Disaggregated Online Success Rates: Academic Years 2013–2023

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	All Students	64%	64%	66%	68%	70%	71%	72%	73%	71%	71%	75%
Age	**19 or Less**	65%	65%	67%	69%	71%	72%	73%	74%	72%	73%	77%
	20-24	62%	63%	65%	66%	69%	70%	71%	71%	69%	70%	73%
	25-29	63%	63%	64%	66%	68%	69%	70%	72%	69%	68%	72%
	30-34	66%	66%	67%	68%	70%	71%	72%	74%	71%	69%	73%
	35-39	67%	67%	68%	69%	71%	72%	73%	76%	72%	71%	74%
	40-49	68%	68%	70%	71%	72%	73%	74%	77%	74%	73%	76%
	50 or More	68%	68%	69%	70%	71%	73%	72%	77%	71%	71%	75%
Ethnicity/ Race	**American Indian/ Alaska Native**	57%	57%	59%	61%	63%	64%	65%	67%	66%	66%	70%
	Asian	71%	72%	73%	75%	77%	78%	79%	81%	79%	80%	82%
	Black/ African American	49%	50%	51%	53%	56%	57%	59%	62%	61%	60%	65%
	Hispanic	59%	60%	61%	63%	65%	66%	68%	69%	67%	67%	71%
	Pacific Islander/ Native Hawaiian	57%	57%	59%	61%	63%	64%	65%	68%	66%	66%	69%
	White	68%	68%	69%	70%	72%	73%	74%	76%	73%	73%	76%
Gender	**Female**	65%	65%	66%	68%	70%	71%	72%	74%	71%	71%	74%

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	Not Female	63%	64%	65%	67%	69%	70%	71%	72%	70%	71%	75%
Special Populations	**DSPS**	64%	65%	66%	67%	69%	70%	71%	74%	72%	71%	73%
	EOPS	69%	69%	70%	71%	73%	74%	74%	75%	74%	73%	75%
	First Generation	61%	61%	63%	64%	67%	67%	68%	69%	67%	67%	71%
	Foster Youth	51%	50%	52%	53%	57%	60%	57%	58%	58%	57%	62%
	Low Income	62%	63%	64%	66%	68%	69%	71%	72%	72%	73%	74%
	Vet/Military	66%	66%	67%	68%	70%	71%	71%	73%	72%	73%	75%

Figure D3

Differences in Success Rates for Each Student Subgroup: 2013, 2020, and 2023

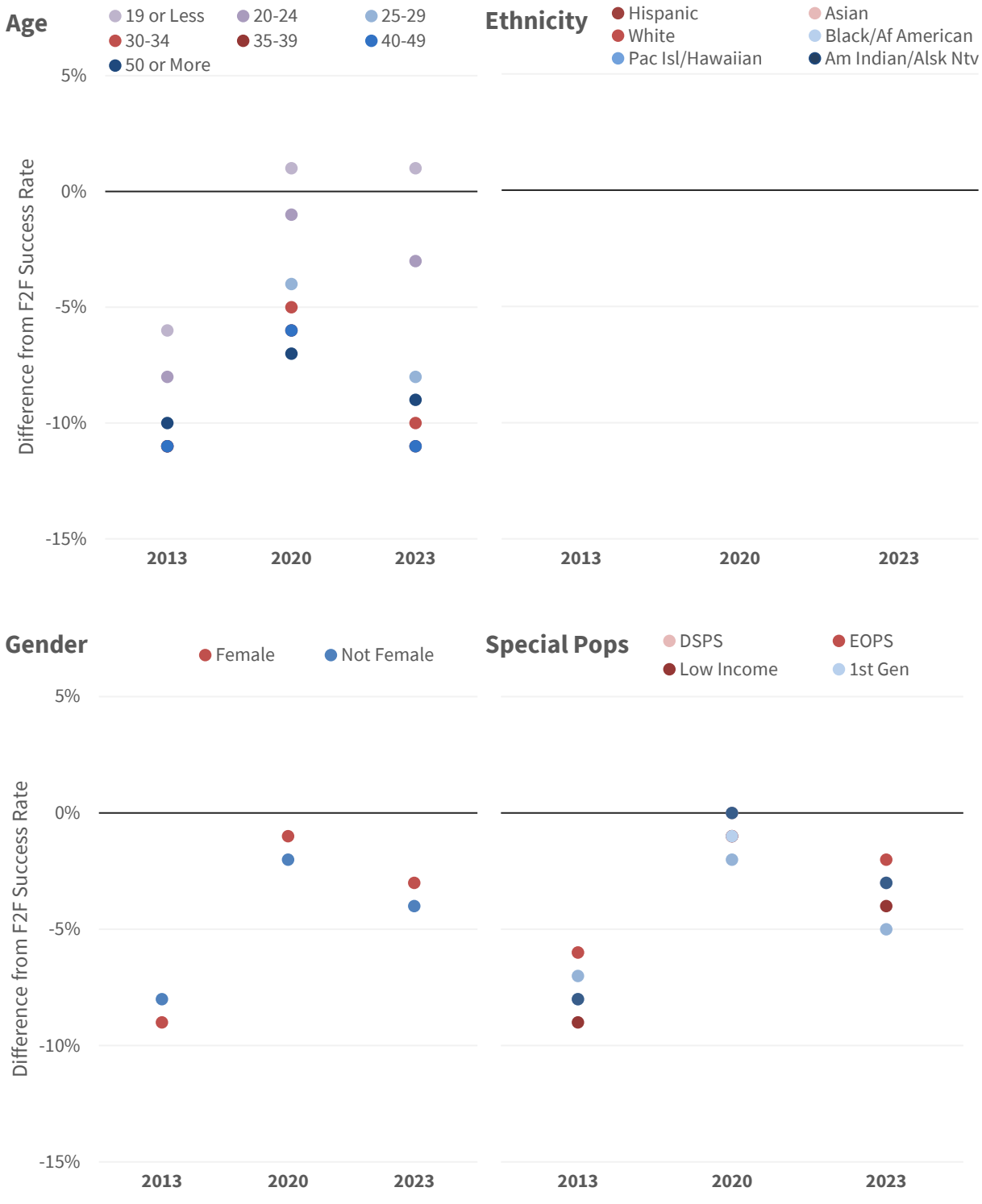


Table To Be Added

Differences in Success Rates for Each Student Subgroup: 2013, 2020, and 2023

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	All Students											
Age	**19 or Less**											
	20-24											
	25-29											
	30-34											
	35-39											
	40-49											
	50 or More											
Ethnicity/ Race	**American Indian/ Alaska Native**											
	Asian											
	Black/ African American											
	Hispanic											
	Pacific Islander/ Native Hawaiian											
	White											
Gender	**Female**											

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	Not Female											
Special Populations	**DSPS**											
	EOPS											
	First Generation											
	Foster Youth											
	Low Income											
	Vet/Military											

CONCLUSION

In conclusion, while online course offerings have expanded significantly over the past decade, nearly tripling in number, access and success remain uneven. The uneven distribution of online courses across programs and colleges—coupled with lower enrollment rates among younger, Hispanic, non-female, disabled, and military students—suggests potential barriers to access and a need for targeted outreach and support.

Although the overall performance gap between online and in-person courses has narrowed, the persistent disparities for certain marginalized populations underscore the importance of further investigation into the factors contributing to these differences. Future research should focus on understanding these disparities to ensure equitable outcomes for all students in both online and in-person learning environments. Addressing these issues will be crucial to maximizing the potential of online education and ensuring its accessibility and effectiveness for all learners.

ACTIONABLE INSIGHTS

Based on this review, two actionable insights are offered to improve online learning tracking and reporting in the CCC system.
Actionable Insight #D1: Monitor and address remaining performance gaps between in-person and online courses, particularly for marginalized student populations.

Actionable Insight #D2: Analyze course offerings and outcomes across different programs and colleges to identify disparities and potential promising practices that can ensure equitable access to and success in online learning opportunities for all students.

SOURCE DETAILS

These analyses were based on statewide Chancellor's Office MIS enrollment records between academic years 2013 and 2023. The following COMIS XF01 codes are used to categorize the following course modalities:

- Face to Face: XF01 = 02/04
- Internet Synchronous: XF01 = 71
- Internet Asynchronous: XF01 = 72
- Hybrid: XF01 = 02/04 and XF01 = 71/72
- Distance Ed: XF01 = 50 series
- Any Online: XF01 = 71/72 or 50 series

APPENDIX E: Research Brief on Student Experiences of Online Education

KEY FINDINGS

- Students without recent online experience prefer in-person classes and struggle with online learning, not technology issues.
- Fully online asynchronous courses are the most preferred format (while hyflex courses are the least preferred), though when it comes to lab courses, in-person courses are preferable.
- Online courses with higher satisfaction are marked by instructors who provide clear guidance and useful resources, and demonstrate care for student success.
- Allowed use of and opinions of the value of AI in online courses is incredibly varied.
- The large majority of students are unaware of the California Virtual Campus (CVC) Exchange and even among those who are aware of the CVC, usage is low.

ACTIONABLE INSIGHTS

- Develop and promote interactive Canvas modules to better prepare students for online learning.
- Focus on asynchronous course development to align with student preferences while considering redesigning or scaling back the hyflex modality.
- Adapt courses requiring hands-on components to provide hybrid or enhanced in-person alternatives.
- Provide professional development for faculty focused on enhancing instructor-student engagement in an online environment
- Develop clear policies or guidelines for AI usage in courses, along with professional development for faculty to incorporate AI meaningfully into learning.
- Increase outreach efforts to inform students about the CVC.

The increasing prevalence of online and hybrid learning formats in the wake of the COVID-19 pandemic has significantly transformed the landscape of higher education. As students continue to adapt to these new modalities, understanding their experiences, preferences, and challenges is essential for ensuring their success in online learning environments. This brief presents the findings from a comprehensive survey of 31,647 CCC students conducted by The RP Group in fall 2024 to explore the diverse ways in which students interact with online learning, examining factors such as course modality preferences, the impact of instructor engagement, and the role of support resources.

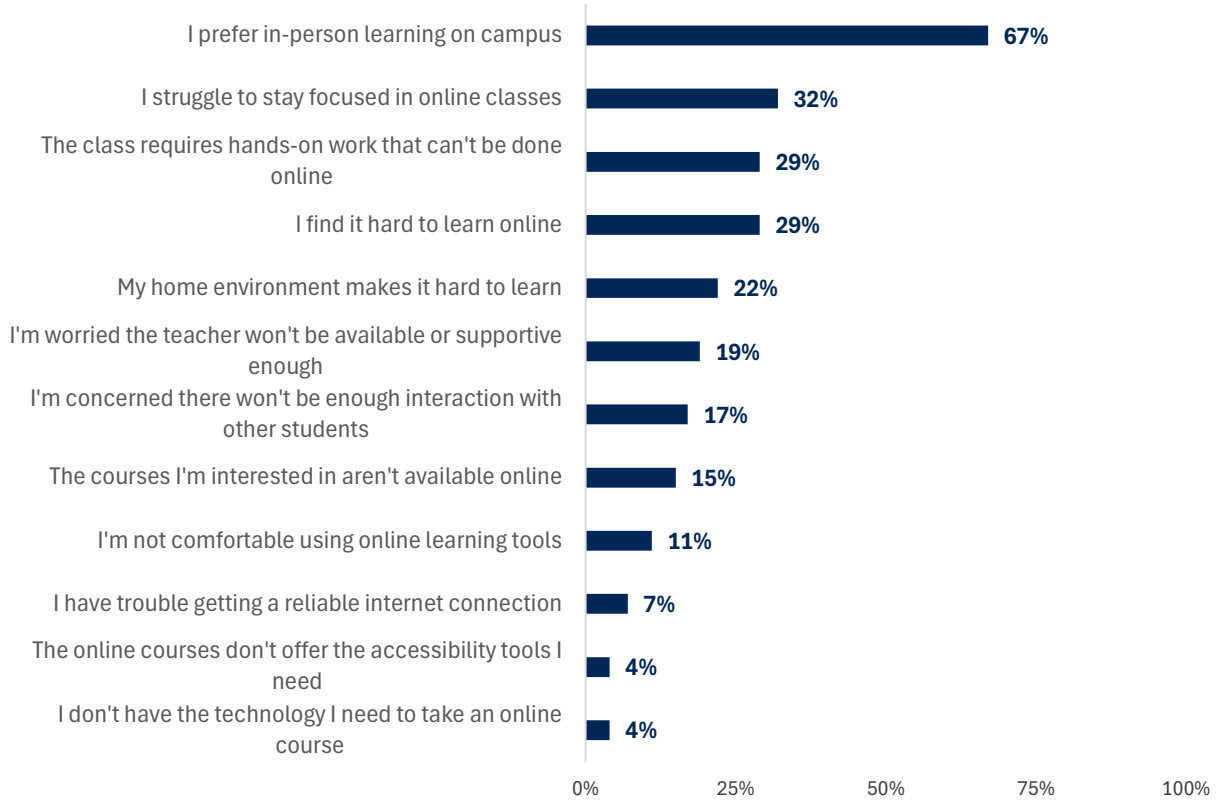
The survey also investigates students' perceptions of the use of artificial intelligence (AI) in online education, a topic of growing relevance in the digital age. By delving into the experiences of students across various demographics, this report provides valuable insights that can inform institutional strategies for improving online and hybrid learning environments.

KEY FINDING #E1: Students without recent online experience prefer in-person classes and struggle with online learning, not technology issues.

When asked why they had not taken courses with an online component in the past year, students most frequently cited a preference for in-person courses. Additionally, approximately 30% of respondents reported struggling to stay focused in online courses, finding it challenging to learn in an online environment, or noting that the class required hands-on work that could not be effectively completed online (see Figure E1).

Figure E1

Reasons students have not taken courses online in the past year

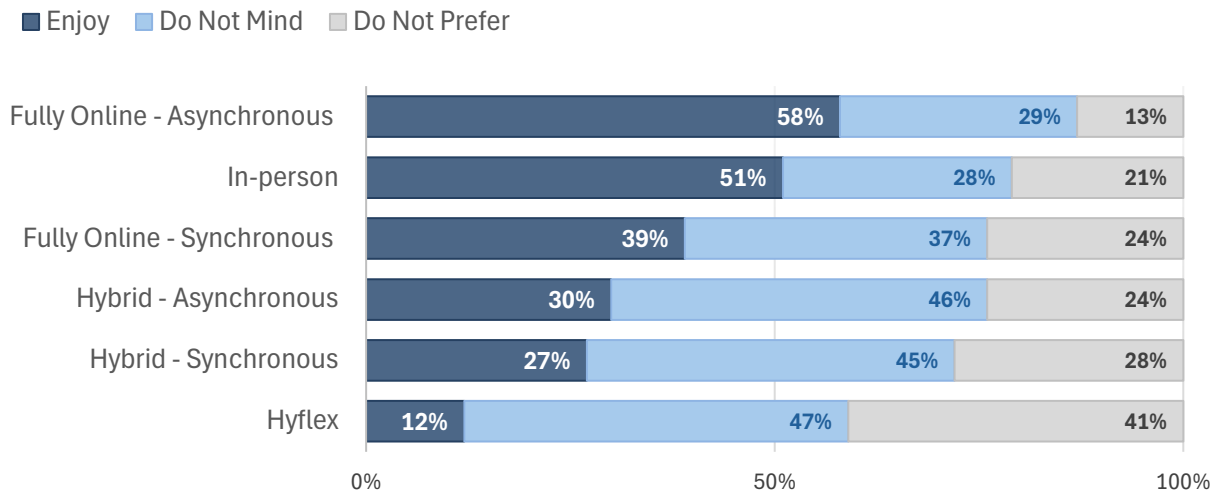


KEY FINDING #E2: Fully online asynchronous courses are the most preferred format (while hyflex courses are the least preferred), though when it comes to lab courses, in-person courses are preferable.

Fully online asynchronous courses are the most preferred modality among online course takers (see Figure E2). A majority (58%) indicated that they enjoy taking fully online asynchronous courses, while only 13% preferred not to take courses in this format. However, even among online course-takers, over half (51%) reported enjoying in-person courses, with only 22% indicating they would prefer not to take courses in person. In contrast, the hyflex format was the least preferred among the modalities. While only 12% of respondents expressed enjoyment of hyflex courses, 41% stated they would prefer not to take courses in this format.

Figure E2

Course Modality Preferences Among Online Students

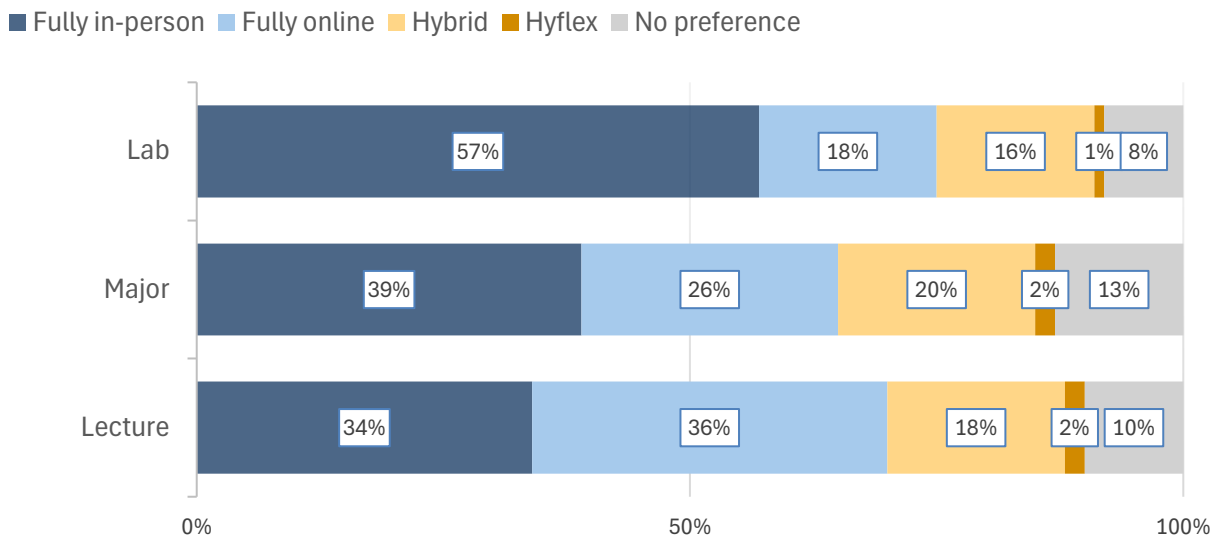


	Hyflex	Hybrid - Synchronous	Hybrid - Asynchronous	Fully Online - Synchronous	In-person	Fully Online - Asynchronous
Enjoy	12%	27%	30%	39%	51%	58%
Do Not Mind	47%	45%	46%	37%	28%	29%
Do Not Prefer	41%	28%	24%	24%	21%	13%

Breaking down students' preferred course modalities by the type of course (lecture, lab, or course for their major) revealed that a majority (57%) preferred taking lab courses in person, while preferences for other types of courses were more diverse (see Figure E3).

Figure E3

Course Modality Preferences by Course Type Among Online Students

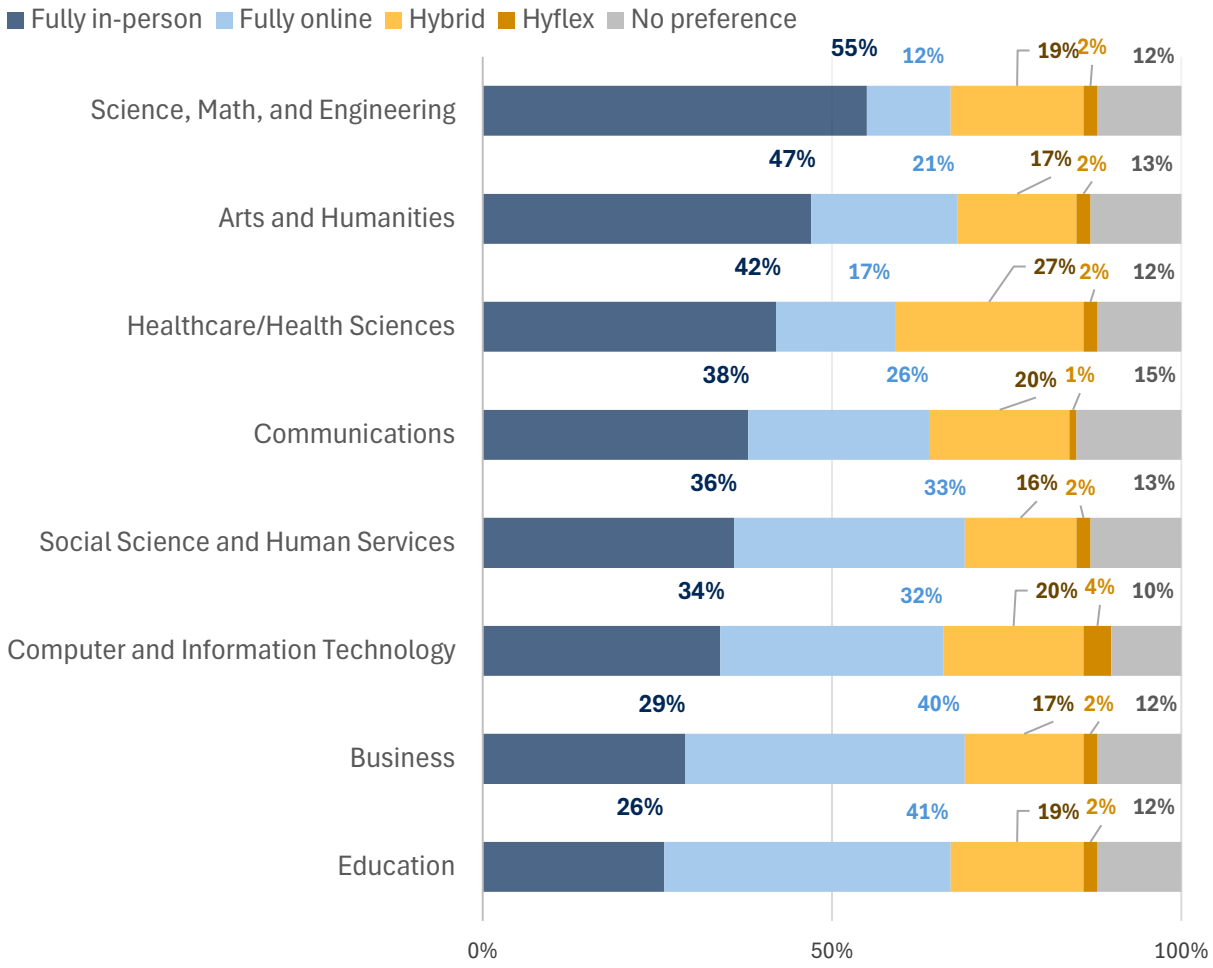


	Lecture	Major	Lab
Fully in-person	34%	39%	57%
Fully online	36%	26%	18%
Hybrid	18%	20%	16%
Hyflex	2%	2%	1%
No preference	10%	13%	8%

Students were further queried about their course modality preferences for courses in their major (see Figure E4). Students who majored in science, math, or engineering, as well as healthcare/health sciences, preferred full in-person learning. Hybrid courses were the second most popular modality for students in these majors. Arts and humanities and communications students also preferred in-person courses, but a quarter to a fifth preferred online or hybrid courses. Social science and human services, computer and information technology, business, and education majors had larger proportions of students preferring fully online courses. Generally, hyflex courses were not preferred across all majors.

Figure E4

Course Modality Preferences for Courses in Major Among Online Students



	Education	Business	Computer and Information Technology	Social Science and Human Services	Communications	Healthcare/ Health Sciences	Arts and Humanities	Science, Math, and Engineering
Fully in-person	26%	29%	34%	36%	38%	42%	47%	55%
Fully online	41%	40%	32%	33%	26%	17%	21%	12%
Hybrid	19%	17%	20%	16%	20%	27%	17%	19%
Hyflex	2%	2%	4%	2%	1%	2%	2%	2%
No preference	12%	12%	10%	13%	15%	12%	13%	12%

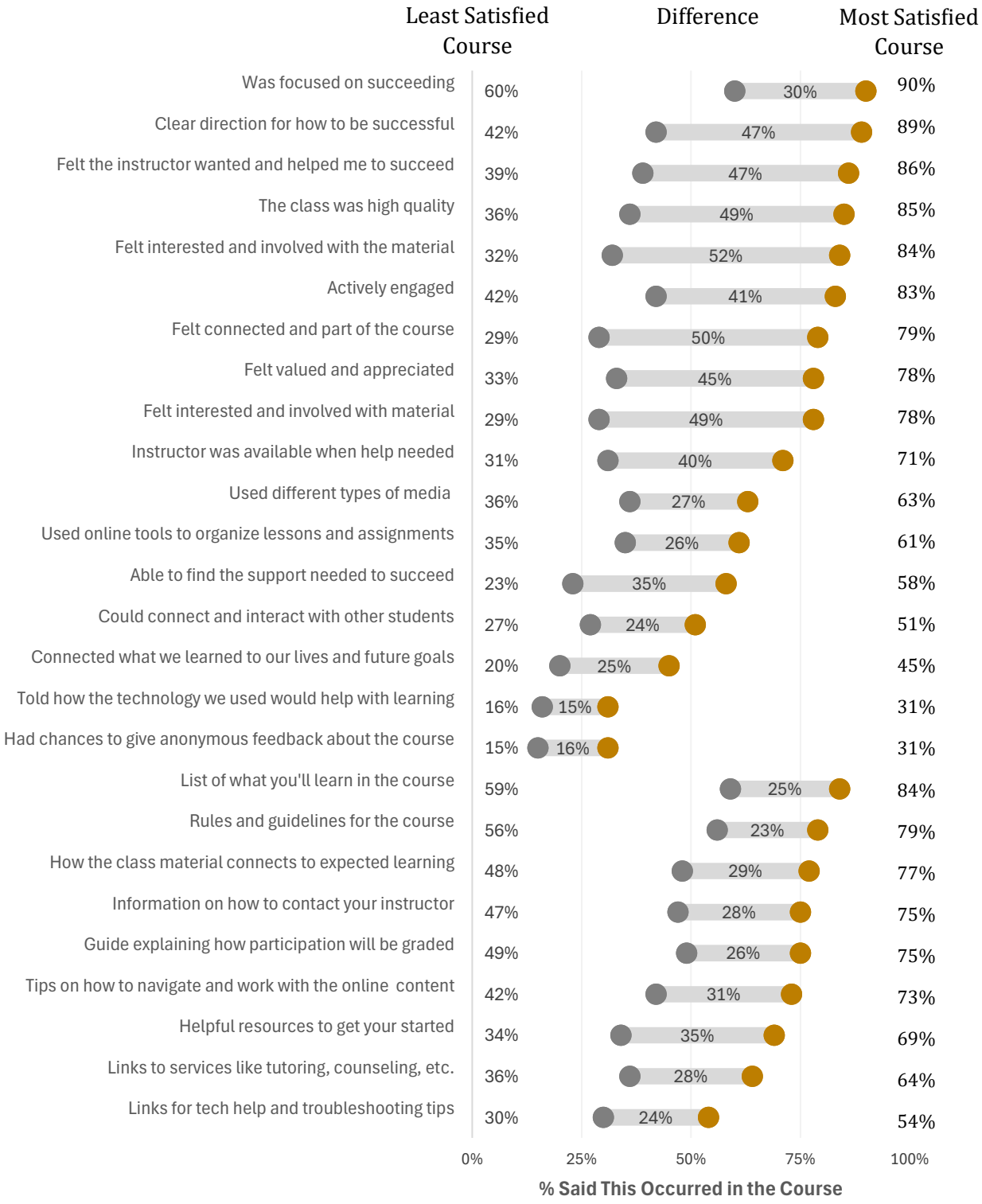
KEY FINDING #E3: Online courses with higher satisfaction are marked by instructors who provide clear guidance, refer students to useful resources, and demonstrate care for student success.

Students reported that instructors teaching the online courses they were most satisfied with provided a much broader range of helpful resources at the beginning of the course compared with those teaching the courses they were least satisfied with. The most notable differences were in the availability of resources to help students get off to a good start, as well as links for tech support and troubleshooting tips

The largest difference between the online courses students found most and least satisfying was the extent to which students felt interested and engaged with the course material; however, the personal interactions students had with their instructor were also an especially salient factor. Respondents reflecting on their most satisfying courses were far more likely to report feeling valued and appreciated in the course and perceiving that the instructor genuinely wanted them to succeed (see Figure 5).

Figure E5

Experiences With Online Courses for Least and Most Satisfying Courses



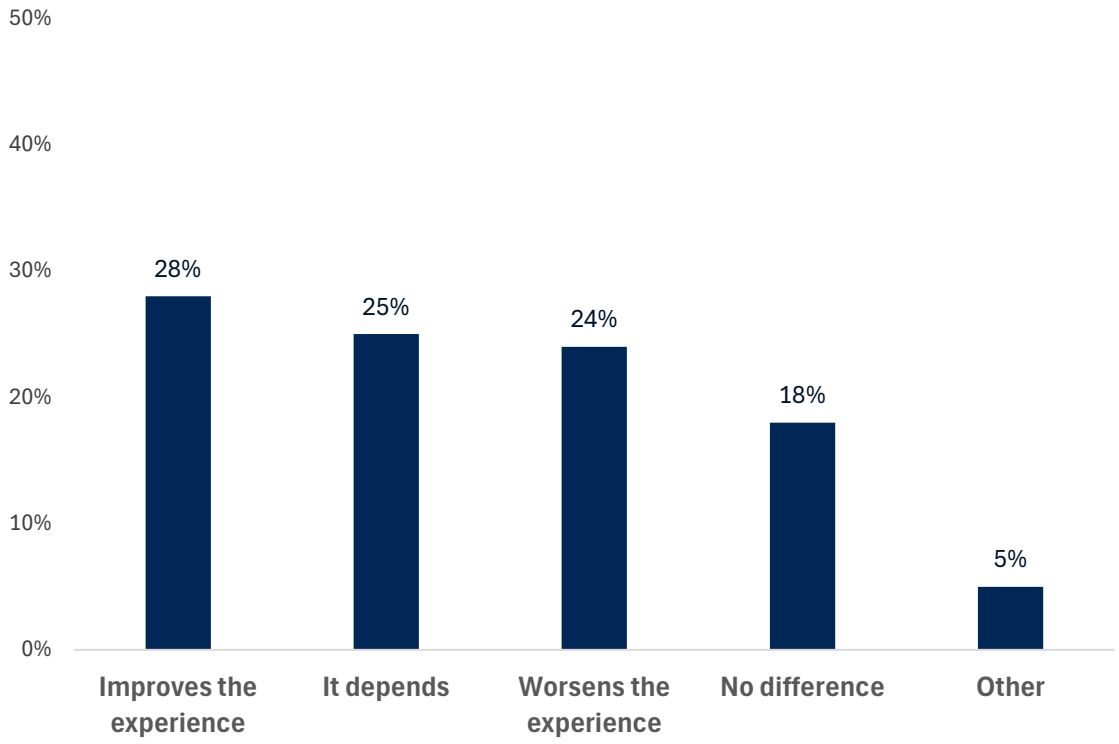
KEY FINDING #E4: Allowed use of and opinions of the value of AI in online courses is incredibly varied.

Less than 10% of student survey respondents reported that their online courses explicitly allowed the use of artificial intelligence (AI), while 59% indicated that AI use was not permitted. An additional 21% stated that instructors did not specify whether AI use was allowed.

When asked for their opinions on how AI impacts the learning experience, responses were mixed (see Figure E6). While 28% of respondents felt that AI improves the learning experience, 24% believed it worsens the experience.

Figure E6

Student Sentiment on AI's Impact on the Learning Experience



KEY FINDING #E5: The large majority of students are unaware of the California Virtual Campus (CVC) Exchange and even among those aware of the CVC, usage is low.

Only 3% of respondents indicated they had ever completed courses through the California Virtual Campus (CVC) Exchange. An additional 11% had heard of the CVC Exchange but had not used it, while the majority (86%) reported never having heard of it. Of note, per Figure E1 above, 15% of respondents who had not taken an online course in the past year indicated that the courses they were interested in were not available online.

CONCLUSION

This survey provides valuable insights into the current landscape of online learning among community college students. Asynchronous online courses emerge as the most favored format, and hyflex the least favored. The exception is in the case of lab courses, wherein an in-person format is preferred. However, a significant number of students still prefer in-person learning or face difficulties adapting to the online environment. Notably, though, technology is not commonly cited as the primary barrier; instead, challenges with adjusting to the learning format itself seem to be more prevalent.

Among those who have not taken an online course in the past year, 15% indicated that the courses they are interested in are not available online, while an overwhelming 86% reported never having heard of the California Virtual Campus (CVC) Exchange. Students' lack of awareness of online options may be a significant issue for students considering online learning.

The findings also highlight that the quality of online learning experiences is shaped more by the presence of key elements, such as clear instructor guidance, availability of resources, and a supportive, inclusive learning environment, than by the course design itself. Students highly value courses in which instructors show genuine care for their success and provide the necessary tools to navigate the online learning experience effectively.

Finally, the role of AI remains a mixed topic among students. While some students view AI as a helpful tool that can enhance learning, others are skeptical of its effectiveness. Students report varied experiences regarding how and whether AI is allowed in their courses, highlighting the need for thoughtful and clear guidance on how AI can be best used to support online education, ensuring that it adds value without overshadowing the personal connection students seek from their learning experiences.

ACTIONABLE INSIGHTS

Based on the survey's findings, several actionable steps can be taken to improve the online learning experience for community college students, aligning with their preferences and addressing their key challenges.

ACTIONABLE INSIGHT #E1: Enhance online readiness with interactive Canvas modules.

To better prepare students for online learning, colleges should develop and promote interactive Canvas modules aimed at helping students understand the expectations and tools involved in online courses. These modules can provide valuable guidance on how to navigate the digital learning environment, build time management skills, and familiarize students with online communication methods, ensuring they are well-prepared to succeed.

ACTIONABLE INSIGHT #E2: Focus on asynchronous course development to align with students' preferences while considering redesigning or scaling back the hyflex modality.

Asynchronous courses have emerged as the most preferred format due to their flexibility and accessibility. In response to this demand, community colleges should prioritize the development of high-quality asynchronous courses that allow students to learn at their own pace and on their own schedules while maintaining academic rigor. By offering more asynchronous course options, colleges can meet the needs of a broader student base, including those who are balancing work, family, or other commitments. Conversely, while some students engage well with hyflex courses, overall, they are among the least preferred formats. Colleges should assess the effectiveness of hyflex courses through student feedback and performance data and consider redesigning or scaling back this modality if it is not meeting the needs of students. It may be more effective to focus on either fully online or fully in-person courses, depending on students' preferences and course content.

ACTIONABLE INSIGHT #E3: Adapt courses requiring hands-on components to provide hybrid or enhanced in-person alternatives.

For courses that require hands-on components, such as labs, students prefer in-person learning. Colleges should explore providing hybrid learning in these courses where possible. This approach can offer students a balance of flexibility while still ensuring they gain the practical experience they need.

ACTIONABLE INSIGHT #E4: Increase outreach to raise students' awareness of the California Virtual Campus (CVC) Exchange.

The majority of students are unaware of the CVC Exchange, a valuable resource for online learning options. Colleges should increase their outreach efforts to inform students about the CVC Exchange and its offerings by connecting students with online course offerings beyond their home institution.

ACTIONABLE INSIGHT #E5: Provide professional development for faculty focused on enhancing instructor-student engagement in an online environment.

Instructor engagement plays a critical role in student satisfaction with online courses. To foster more effective online learning experiences, colleges should invest in professional development opportunities for faculty that focus on enhancing instructor-student engagement, delivering clear and consistent guidance, and creating supportive, inclusive online environments. This additional support could empower instructors to better connect with students, encourage active participation, and create a sense of community within the online classroom.

ACTIONABLE INSIGHT #E6: Develop clear policies or guidelines for AI usage in courses, along with professional development for faculty to incorporate AI meaningfully into learning.

Allowed use of and opinions about AI are quite mixed. Colleges should establish clear policies and guidelines on the use of AI in online courses to reduce ambiguity and promote ethical practices. Providing students and faculty with training on effective and responsible AI use can enhance understanding and application. Colleges should also engage students in open dialogues about AI, address concerns, and regularly evaluate its impact to ensure it enhances learning outcomes.

SOURCE DETAILS

The RP Group sent the online student survey to each California community college's institutional research, planning, and effectiveness (IRPE) department on October 7, 2024. IRPE offices were charged with distributing the survey to all currently enrolled students. The survey was available until November 19, 2024, with periodic reminders sent via email by the college. Students were incentivized to participate by being entered into a drawing for one of 116 fifty-dollar ($50) Amazon gift cards. The student survey contained 57 items (including five open-ended questions).

SAMPLE

A total of 31,647 students representing 117 unique CCCs (credit and noncredit institutions), completed the survey. The number of responses per college ranged from 1 to 3,496 (mean: 270; SD: 502; median: 30), with 73 colleges having responses from at least 10 students.

Regarding student respondent demographics, two-thirds identified as women. Nearly half (48%) identified as Hispanic, 29% as White, 19% as Asian, and 7% as Black/African American. Over half (53%) were between the ages of 18 and 25. Additionally, 55% of respondents identified as first-generation college students, 17% identified as members of the LGBTQ+ community, 14% as single parents, and 17% as having a disability. Over half (54%) were enrolled in 12 or more credit units.

More than half of the respondents were currently employed either full-time (20%) or part-time (32%), and 58% were receiving financial aid. Across the sample, 38% of respondents were in their first year at their CCC, while an additional 37% had been enrolled for 1–2 years.

APPENDIX F: Research Brief on Faculty Experiences of Online Education

KEY FINDINGS

- Faculty without recent online teaching experience prefer teaching in-person classes, though they also worry about student engagement and academic dishonesty in online environments.
- Regardless of their history with online teaching, faculty prefer in-person teaching, with their preference for fully online courses varying by discipline, and hyflex modalities being the least favored.
- Many faculty offer (but do not require) online learner readiness tools, and there is mixed sentiment on AI's impact on courses.
- Faculty prioritize accessible and engaging online courses but face challenges addressing bias and technology barriers.
- Faculty connect students to academic and library services more than career, transfer, or mental health resources, though often in a passive way (i.e., syllabus links).

ACTIONABLE INSIGHTS

- Prioritize faculty professional development in popular online modalities, such as fully online and hybrid formats, tailored to discipline-specific needs.
- Improve learner preparation by mandating readiness modules for both students and faculty.
- Equip faculty with training to effectively integrate emerging technologies and AI into their online courses.
- Provide faculty with strategies and tools to foster community and student connection in virtual environments.
- Actively connect students to the wide range of support services offered by colleges through personalized guidance and standardized approaches.

As online learning continues to expand across community colleges in the wake of the COVID-19 pandemic, understanding how faculty design and implement these courses is crucial for improving the overall educational experience. To gain a comprehensive understanding of online education, a faculty survey across the California Community Colleges (CCC) system was conducted in fall 2024 to explore how faculty approach structuring and delivering online and hybrid learning experiences. This survey sought to capture insights into the strategies faculty use to engage students, the tools and resources they rely on, and the challenges they face in maintaining effective online learning environments.

This brief presents findings from 5,412 faculty representing 111 California community colleges. By examining faculty practices across different disciplines and experience levels, the survey aims to provide a detailed picture of the current landscape of online teaching in community colleges. The findings from this survey offer valuable insights into the ways faculty are adapting to the evolving

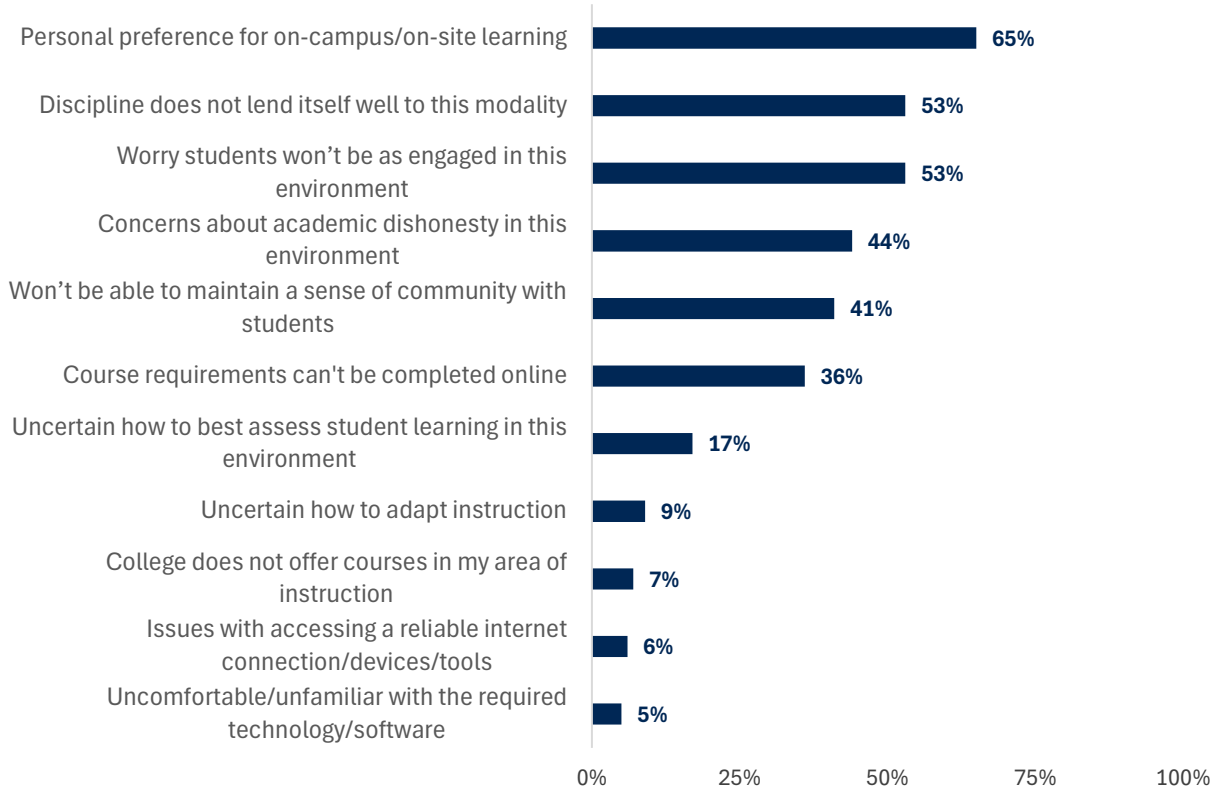
demands of online education, as well as identifying areas where additional support, resources, or professional development might be needed to improve online teaching practices and student outcomes.

KEY FINDING #F1: Faculty without recent online teaching experience prefer teaching in-person classes, though they also worry about student engagement and academic dishonesty in online environments.

Among faculty who had not taught classes with an online component in the past year, respondents most frequently cited a personal preference for on-campus/in-person learning, concerns about student engagement and academic dishonesty in an online environment, and/or the perception that their discipline is not well-suited to an online modality. Only a small number of respondents mentioned technological or internet-related challenges (see Figure F1).

Figure F1

Reasons for not teaching online in the past year



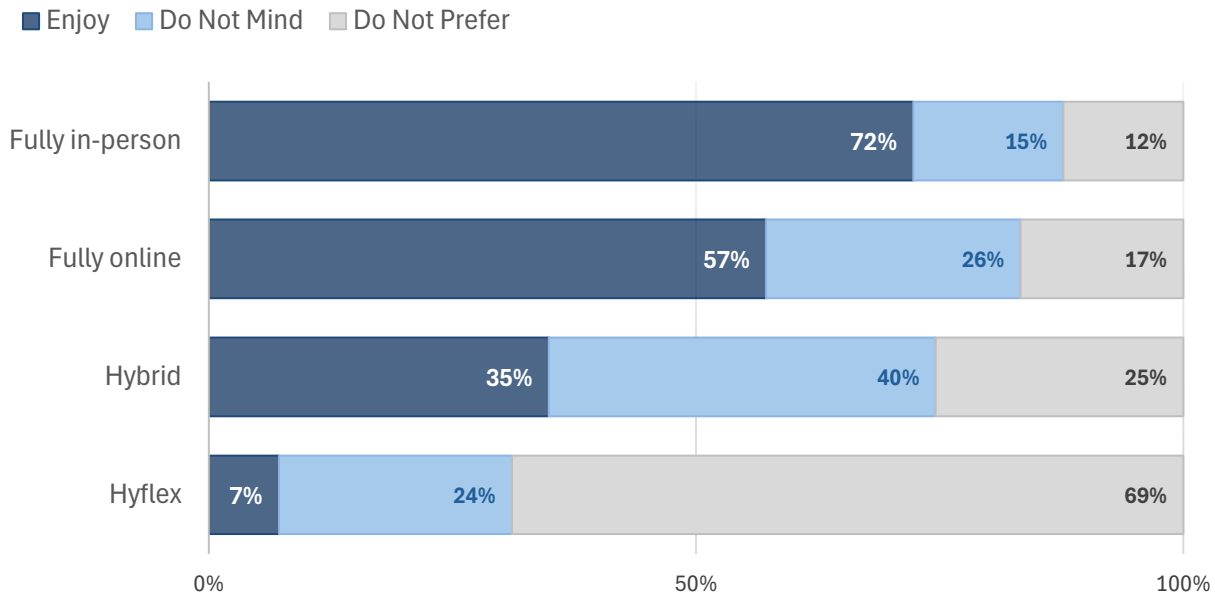
KEY FINDING #F2: Regardless of their history with online teaching, faculty prefer in-person teaching, with their preference for fully online courses varying by discipline, and hyflex modalities being the least favored.

Among faculty who had taught courses with an online component in the past year, 72% of respondents reported enjoying fully in-person teaching, while 57% expressed a preference for fully online classes (see Figure F2). Opinions about hybrid teaching were more varied, whereas there was a general consensus that hyflex teaching was the least preferred format among faculty.

In general, the general preference for in-person teaching was observed across faculty disciplines (see Figure F3), with faculty teaching in the social sciences and science, technology, engineering, and mathematics (STEM) fields having a greater preference for in-person teaching than fully online, and faculty in the business, computer sciences, and education fields having a greater preference for fully online courses.

Figure F2

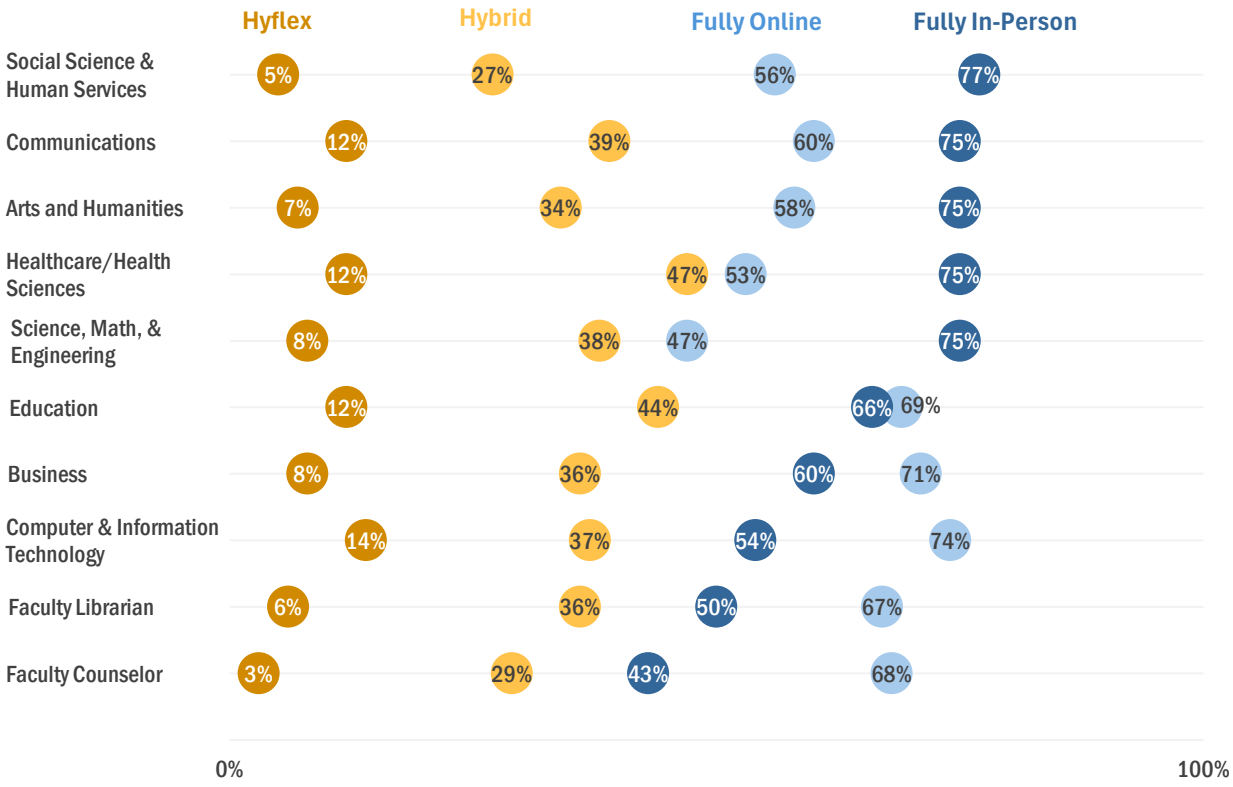
Course Modality Teaching Preference for Instructors



	Hyflex	Hybrid	Fully online	Fully in-person
Enjoy	7%	35%	57%	72%
Do Not Mind	24%	40%	26%	15%
Do Not Prefer	69%	25%	17%	12%

Figure F3

Course Modality Preferences by Discipline Among Online Faculty



Course Modality Preferences by Discipline Among Online Faculty	Hyflex	Hybrid	Fully online	Fully in-person
Social Science & Human Services	5%	27%	56%	77%
Communications	12%	39%	60%	75%
Arts and Humanities	7%	34%	58%	75%
Healthcare/Health Sciences	12%	47%	53%	75%
Science, Math, & Engineering	8%	38%	47%	75%
Education	12%	44%	69%	66%
Business	8%	36%	71%	60%
Computer & Information Technology	14%	37%	74%	54%
Faculty Librarian	6%	36%	67%	50%
Faculty Counselor	3%	29%	68%	43%

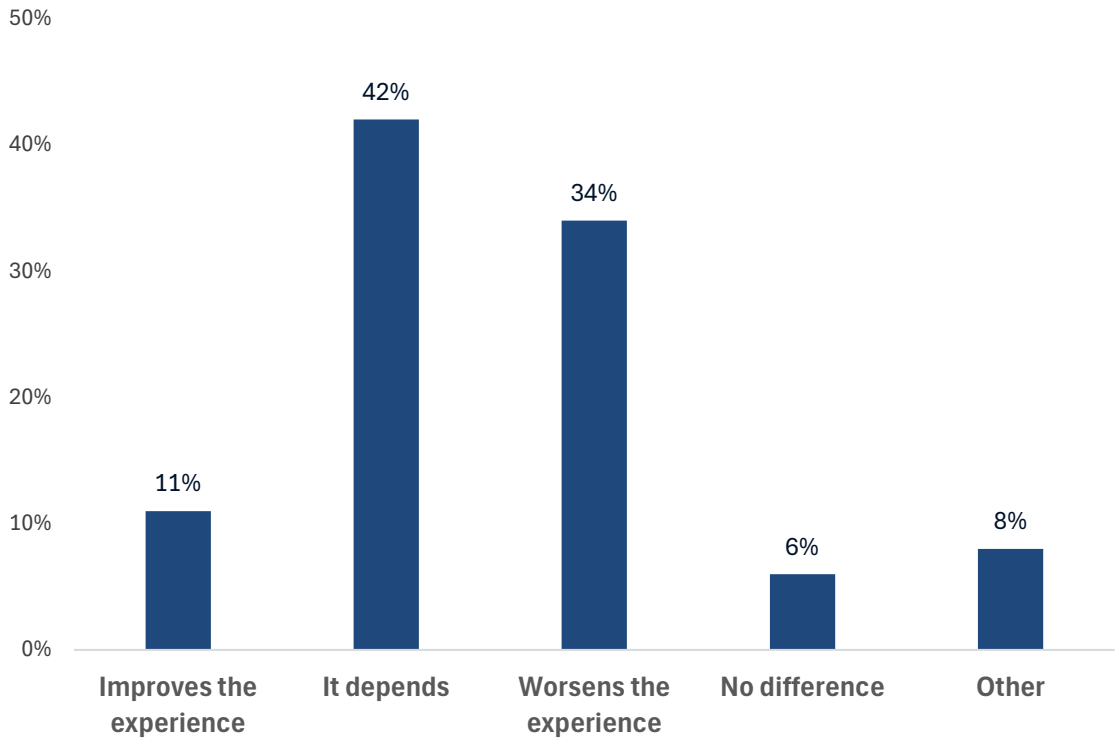
KEY FINDING #F3: Many faculty offer (but do not require) online learner readiness tools, and there is mixed sentiment on AI's impact on courses.

A majority of faculty respondents (70%) reported offering online learner preparation tools or resources to students. The most commonly used resource was college- or district-developed online learner readiness modules (68%). About half of the faculty providing such tools either developed their own modules or curated resources from multiple sites to create customized versions for their students. However, less than half (46%) of faculty referred students to use these tools, and only 37% mandated their use in all courses.

Faculty practices regarding artificial intelligence (AI) in courses revealed even greater variability. Just 12% actively allowed AI in all their courses, while 8% permitted it in some of their courses. Nearly half (46%) prohibited AI use, and 23% did not specify a policy. Faculty sentiment on AI's impact was highly polarized: 11% believed it enhances the learning experience, 6% felt it made no difference, 34% thought it worsens the experience, and the largest group (42%) noted that its impact depends on the context.

Figure F4

Faculty Sentiment on AI's Impact on the Learning Experience

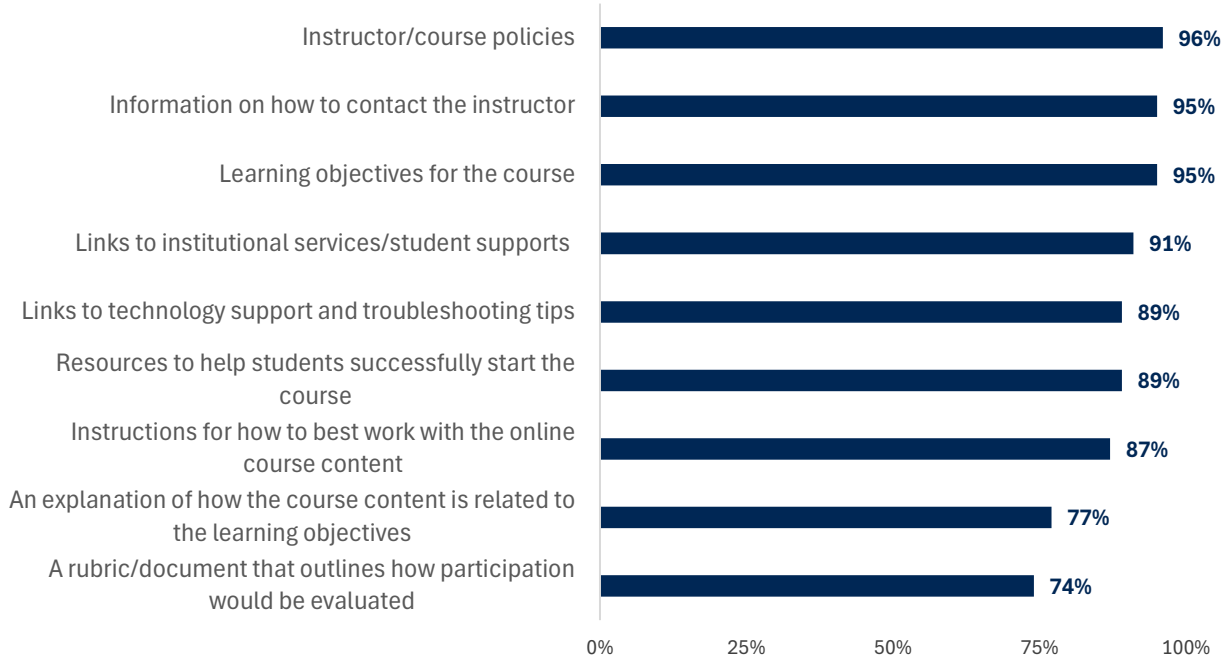


KEY FINDING #F4: Faculty prioritize accessible and engaging online courses but face challenges addressing bias and technology barriers

When asked about the information they provide to orient students at the start of a course, most faculty emphasized key details such as course policies, learning objectives, and how to contact the instructor. Many faculty also prioritized sharing links to institutional services, technology support, and resources to help students navigate the course successfully. While slightly less common, practices like connecting course content to learning objectives or providing rubrics for participation were still widely implemented, highlighting the diverse strategies faculty use to set students up for success (see Figure F5).

Figure F5

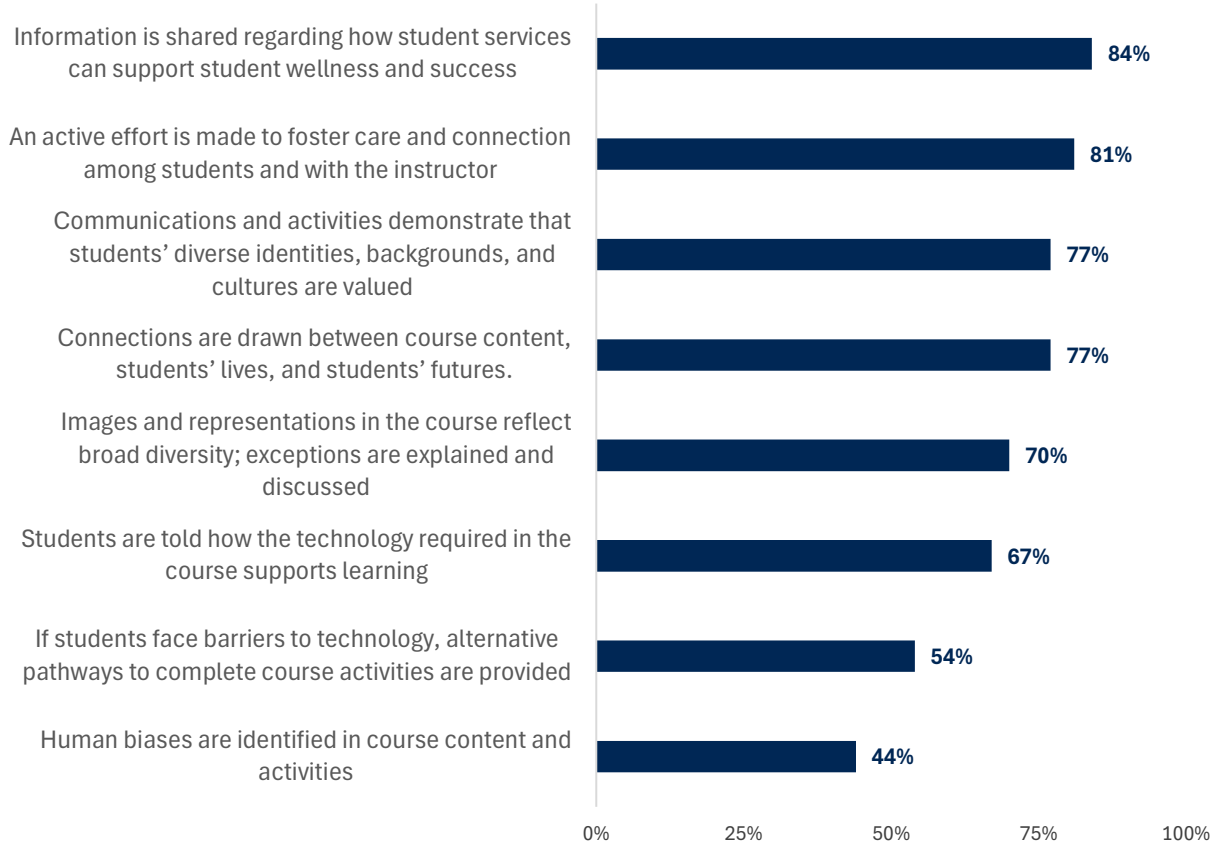
Information Faculty Provided to Students at the Start of Online Courses



Faculty reported using various strategies to create supportive and inclusive online learning environments, such as fostering care and connection among students and with the instructor and emphasizing the value of diverse identities, backgrounds, and cultures. However, just over half of faculty (54%) reported providing alternative pathways for students facing technology barriers, and less than half (44%) actively identified human biases in course content and activities (See Figure F6).

Figure F6

Pedagogical Practices Among Online Faculty



Faculty most commonly reported making themselves readily available, using multimedia to enhance learning, and fostering opportunities for peer engagement and community (Figure F7). Most faculty also connected students with the resources they need to succeed. However, there are areas for growth, particularly in maximizing the use of course management system (CMS) tools and providing more opportunities for students to give anonymous feedback.

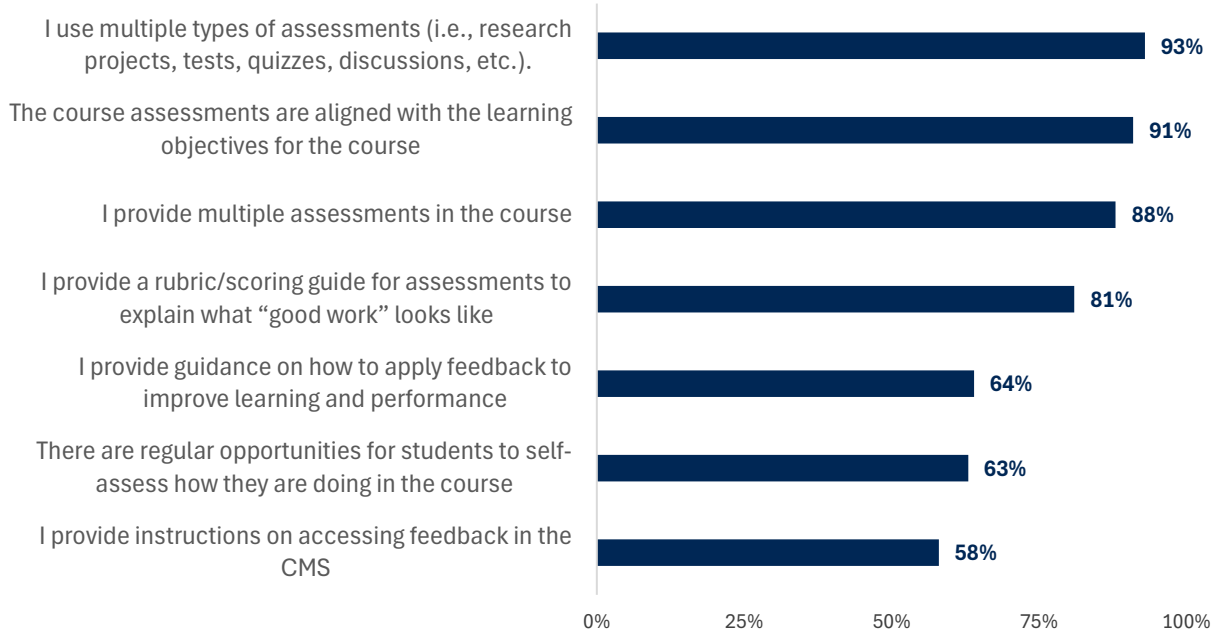
Figure F7

Practices Implemented by Faculty Teaching in Online Environments

Faculty emphasized leveraging a variety of assessment practices in their online courses. The majority of faculty use multiple types of assessments, ensure alignment with course learning objectives, and provide multiple assessment opportunities. Rubrics and scoring guides are commonly used to clarify expectations. Opportunities for self-assessment and instructions for accessing feedback in course management systems (CMS) are less prevalent (see Figure F8).

Figure F8

Assessment Practices Implemented by Faculty Teaching in Online Environments

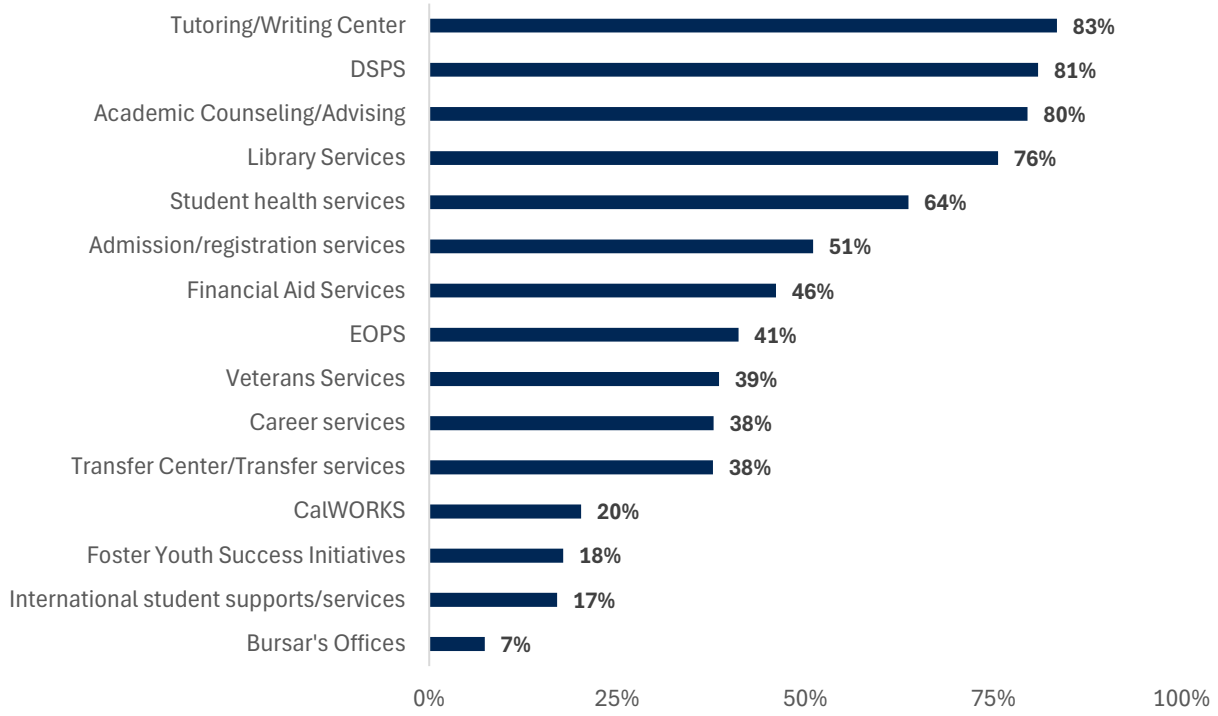


KEY FINDING #F5: Faculty connect students to academic and library services more often than career, transfer, or mental health resources, though often in a passive way (i.e., syllabus links).

Faculty respondents reported that they connect students to a wide range of support services in their online courses. The most frequently cited services include tutoring or writing centers, disabled student programs and services (DSPS), and academic counseling/advising. Library services were also commonly highlighted. A majority of faculty connect students with mental health and student health services, while about half of faculty connect students with admission/registration and financial aid services. Connections to other services, such as career services, transfer support, and programs for specific student populations (e.g., veterans, foster youth, international students), are provided by smaller proportions of faculty, with some services, like bursar's offices and CalWORKS, less commonly referenced. When it comes to *how* faculty connect students to these services, they use a variety of methods, with the most common approach being to share webpages in the syllabus (81%)—see Figure F9.

Figure F9

Support Services Referrals by Faculty in Online Courses



CONCLUSION

The faculty survey findings presented in this brief offer valuable insights into the current landscape of online and hybrid teaching within the California Community Colleges system. With over 5,400 faculty respondents, the data highlight a clear preference for in-person teaching yet also reveal that faculty are adapting to online and hybrid formats, particularly in response to the ongoing demands of post-pandemic education. While these formats are increasingly embraced, there are notable challenges—especially regarding faculty comfort, perceptions of student engagement, and concerns over academic dishonesty.

The report underscores the importance of faculty professional development in online and hybrid modalities, as well as the integration of emerging technologies like artificial intelligence. Faculty continue to prioritize student engagement and accessibility in their courses, but there are gaps in how these goals are achieved—particularly when it comes to addressing biases and technology barriers. Furthermore, while faculty are connecting students to academic support services, there is room for improvement in actively guiding students to career, transfer, and mental health resources.

As the landscape of online education continues to evolve, it is essential to provide faculty with the tools, training, and support they need to enhance the student experience.

ACTIONABLE INSIGHTS

Based on the faculty survey's findings, several actionable steps can be taken by the CCC system to improve the online learning experience for community college students and to support faculty with online teaching and learning.

ACTIONABLE INSIGHT #F1: Prioritize faculty professional development in popular online modalities (fully online and hybrid formats).
While faculty generally prefer in-person teaching, a majority have adapted to hybrid and fully online teaching formats. However, hyflex is the least favored modality and points to a critical need for ongoing professional development that helps faculty thrive in online and hybrid settings. Tailored training should focus on the specific challenges and opportunities that different disciplines face in these modalities, ensuring faculty are prepared not only to deliver content but also to foster student engagement and minimize concerns over academic dishonesty. Ensuring that this professional development is discipline-specific will increase both faculty comfort and efficacy in online teaching, ultimately improving student learning outcomes.

ACTIONABLE INSIGHT #F2: Improve learner preparation by mandating readiness modules for both students and faculty.

Many faculty offer learner readiness tools but few require them. Mandating readiness modules for both students and faculty can help address these gaps. For students, such modules ensure they are prepared for the unique challenges of online learning. For faculty, training modules that emphasize the alignment of course content, objectives, and rubrics can create more consistent, coherent, and engaging online courses.

ACTIONABLE INSIGHT #F3: Equip faculty with training to effectively integrate emerging technologies and AI into their online courses.

The survey shows mixed sentiments on AI's role in education, with some faculty believing it enhances learning while others are concerned it could worsen the experience. Faculty development should include not only training on how to use AI but also how to evaluate and incorporate emerging technologies in a way that benefits both students and faculty. Faculty must be empowered to confidently make decisions about AI's use in their courses, addressing concerns such as academic integrity while leveraging its potential for personalized learning.

ACTIONABLE INSIGHT #F4: Provide faculty with strategies and tools to foster community and student connection in online environments.

While faculty prioritize accessibility and engagement, there are still gaps in addressing technology barriers and biases. It is essential to equip faculty with actionable strategies to build and maintain a sense of community in online and hybrid classes. Further, ensuring faculty are trained in recognizing and addressing biases in course content and providing alternative pathways for students facing technology barriers will make online environments more inclusive and engaging.

ACTIONABLE INSIGHT #F5: Actively connect students to the wide range of support services offered by colleges through personalized guidance and standardized approaches.

While faculty often connect students to academic and library services, there is a noticeable gap in proactive and personalized connections to other services such as career, transfer, and mental health resources. Faculty should be provided with the tools and knowledge to actively and regularly refer students to these services—not just as passive links in syllabi but through personalized interactions that encourage students to make use of the resources available. Standardized approaches can ensure all students are receiving consistent support across the board, fostering both academic and emotional well-being.

SOURCE DETAILS

The RP Group sent a copy of the online faculty survey to each California community college's institutional research, planning, and effectiveness (IRPE) department on October 7, 2024. IRPE offices were charged with distributing the survey to all currently teaching CCC faculty. The faculty survey contained 50 items (including four open-ended questions).

A total of 5,412 faculty, representing 111 unique institutions, completed the survey. The number of responses per college ranged from 1 to 267 (mean: 49; SD: 49; median: 38). Seventy-nine colleges had responses from at least 10 faculty members. Regarding participant demographics, 58% of survey respondents identified as women, 58% identified as White, and 37% were above the age of 55. Over half (55%) were full-time faculty, while 45% were part-time/adjunct. Sixty-two percent of respondents had more than 10 years of teaching experience, while 17% had five or fewer years of teaching experience.

APPENDIX G: Research Brief on Student Support Services Lead Experiences and Online Offerings

KEY FINDINGS

- Most colleges have yet to create centralized, user-friendly hubs for online support.
- Colleges offer a wide array of online support services, but there is considerable variation in the depth and accessibility of these services.
- The availability of online services during evenings and weekends is limited.
- Marketing efforts of online supports primarily focus on websites, while channels like social media and online applications remain underutilized.
- Colleges face barriers like staffing shortages, outdated technology, and American Disability Act (ADA) compliance issues that hinder the implementation of online services.

ACTIONABLE INSIGHTS

- Create or enhance centralized online hubs with intuitive design and seamless integration to improve accessibility and streamline navigation for students.
- Standardize the depth and accessibility of key support services.
- Extend service hours and adopt asynchronous and 24/7 tools, such as chatbots and self-help resources, to accommodate students' varied schedules.
- Broaden marketing efforts beyond websites.
- Invest in staffing, modernize technology infrastructure, and ensure ADA compliance across all platforms to provide equitable and efficient support.

As online learning becomes an increasingly prominent mode of education in community colleges, particularly in response to the COVID-19 pandemic, understanding the support services available to students in these environments is essential for fostering student success. To gain a deeper insight into the scope and effectiveness of these services, a student survey was conducted across community colleges to explore the range of support services offered to students in online and hybrid learning contexts. This survey aimed to capture information about the types of academic, technical, and personal support available to online students, as well as the strategies institutions use to ensure students' needs are met in a virtual environment. Surveys of California Community College (CCC) student support service leads from 52 colleges was paired with a thorough analysis of the websites of all 116 CCCs. Data from the two sources were combined to explore the types of academic, technical, and personal support available to students in online and hybrid learning environments and examine how institutions adapt these services for digital delivery.

The results presented in this report provide important insights into the current state of student support in online education, identifying both strengths and gaps in the services offered. By examining the diverse range of approaches taken by colleges, these brief highlights areas where further investment in resources or improvements in service delivery could help enhance the overall student experience and contribute to better academic outcomes for online learners.

KEY FINDING #G1: Most colleges have yet to create centralized, user-friendly hubs for online support.

The California Community Colleges Chancellor's Office (CO) indicates that a one-stop shop is a place where students in the online learning environment can access critically important student support services in a holistic manner. These "online support ecosystems" can be embedded into a Canvas course shell but, most importantly, should provide easy access to real-time support for students.[12] For example, real-time financial aid access might include the ability to upload documents, make virtual appointments, and attend virtual workshops.

In the survey of student support services leads, one-third of responding colleges (n=17) reported having a virtual one-stop shop, where all online student support services are centralized. This finding aligns with the comprehensive website analysis, which found that 34% of colleges evaluated (n=40) had a virtual space (e.g., webpage, landing site) that provides a single point of access for support services. Among these 40 colleges with a central space to access student support services, the majority (78%) could be accessed quite easily—in one click from the college's home page.

That said, only virtual spaces at four of these colleges appear to qualify as one-stop shops with clearly delineated online services and easy access to action-oriented online support. Thirteen colleges had well-organized virtual spaces providing descriptions of and easy access to support services.

KEY FINDING #G2: Colleges offer a wide array of online support services, but there is considerable variation in the depth and accessibility of these services.

While dedicated support hubs were uncommon, most colleges reported offering a range of online support services. Over 80% provided online access to Academic Counseling/Advising (94%), Financial Aid Services (90%), Admission/Registration (88%), Transfer Services (86%), and Tutoring/Writing Centers (84%). Extended Opportunity Programs and Services (EOPS) were also widely available online (84%). In contrast, online support for the Bursar's Office was less common (35%), and just over half (55%) of colleges offered online services for international students (see Figure G1).

Survey findings generally aligned with the website analysis, with a few notable differences:

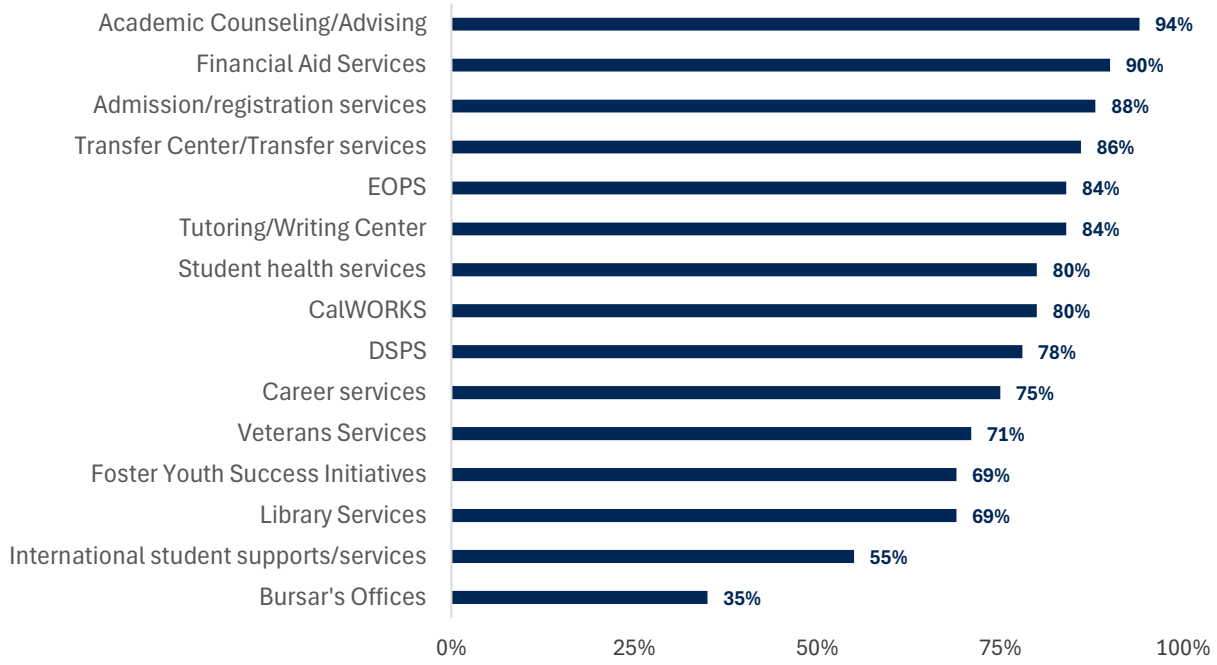
- EOPS: 64% of websites listed online EOPS services, compared with 84% in the survey.
- Admissions: 77% of websites indicated online Admission/Registration services, versus 88% in the survey.
- Tutoring: 94% of websites showed online tutoring availability, higher than the survey's 84%. Most colleges in the website evaluation had online services available for general

[12] See CVC's Integrated Support Hub page

tutoring. Students can schedule appointments virtually, meet with a representative or tutor, and use the service. Some colleges had additional online services such as study room sign-ups and online paper and question submission.

Figure G1

Student Support Services Offered Online According to Survey Respondents



Online student support services are widely available across the CCC system, but their depth and accessibility vary significantly. For example, over 90% of colleges offer virtual academic counseling, with 95% allowing online appointment scheduling and 90% providing options to meet, talk, or chat with a counselor. These services are primarily accessed via direct website links (71%), with 65% available through student portals and 12% through Canvas.

Virtual Career Center services are offered by 75% of colleges. Among these, 72% support appointment scheduling, and 66% allow students to meet, talk, or chat with a career advisor. Online or virtual access methods mirror academic counseling, with 73% of services linked directly on websites, 55% through student portals, and 12% via Canvas.

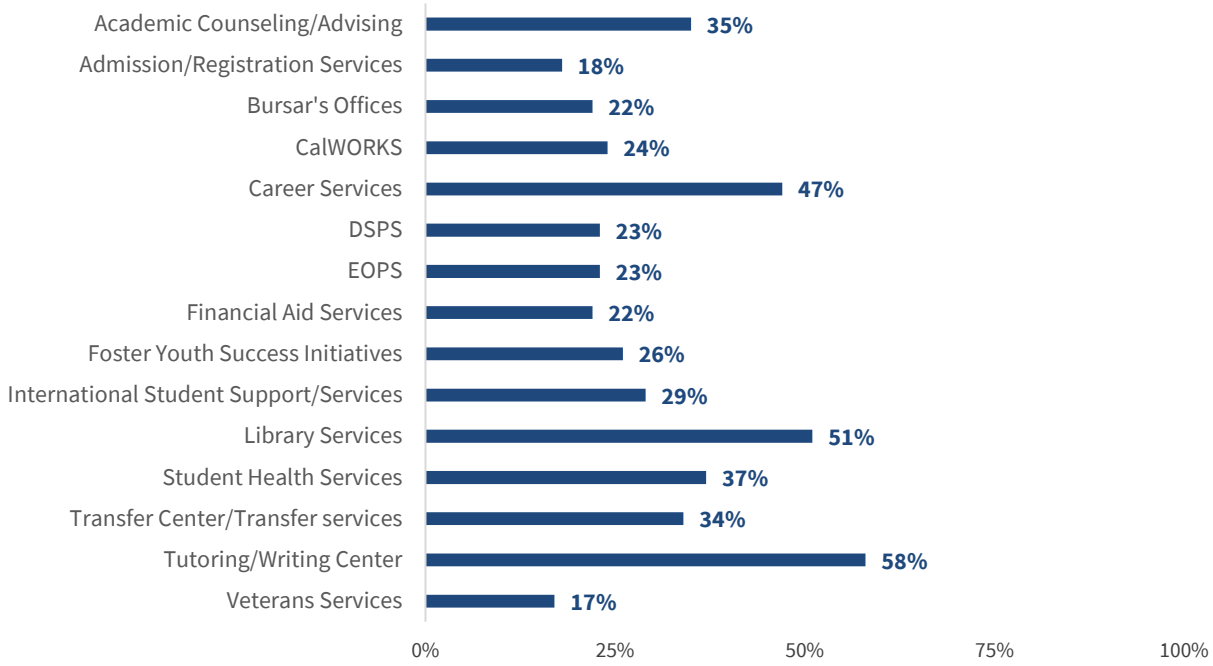
Online financial aid services are more limited. Only 30% of colleges offering these services allow online appointment scheduling, and 59% provide options to meet, talk, or chat with an advisor online. Similarly, while around 80% of colleges offer online Disabled Student Programs and Services (DSPS) services, only 56% allow online appointment scheduling, and 69% enable online interaction with a staff member.

The modalities used for online student support also vary widely. As shown in Figure G2a, live chat/messaging is the most widely adopted, particularly in tutoring/writing centers (74%) and career services (74%). Virtual office hours are common in bursar's offices and career services, while form and paperwork submissions are moderately utilized in libraries (51%), tutoring/writing centers (58%), and career services (47%). Although less common, Zoom appointments are used most often in bursar's offices (67%) and library services (34%). See Figure G2b.

Figure G2a

Modalities of Support Offerings by Service Area – Paper and Paperwork Submissions and Live Chat/Messaging

Form and Paperwork Submissions



Live Chat/Messaging

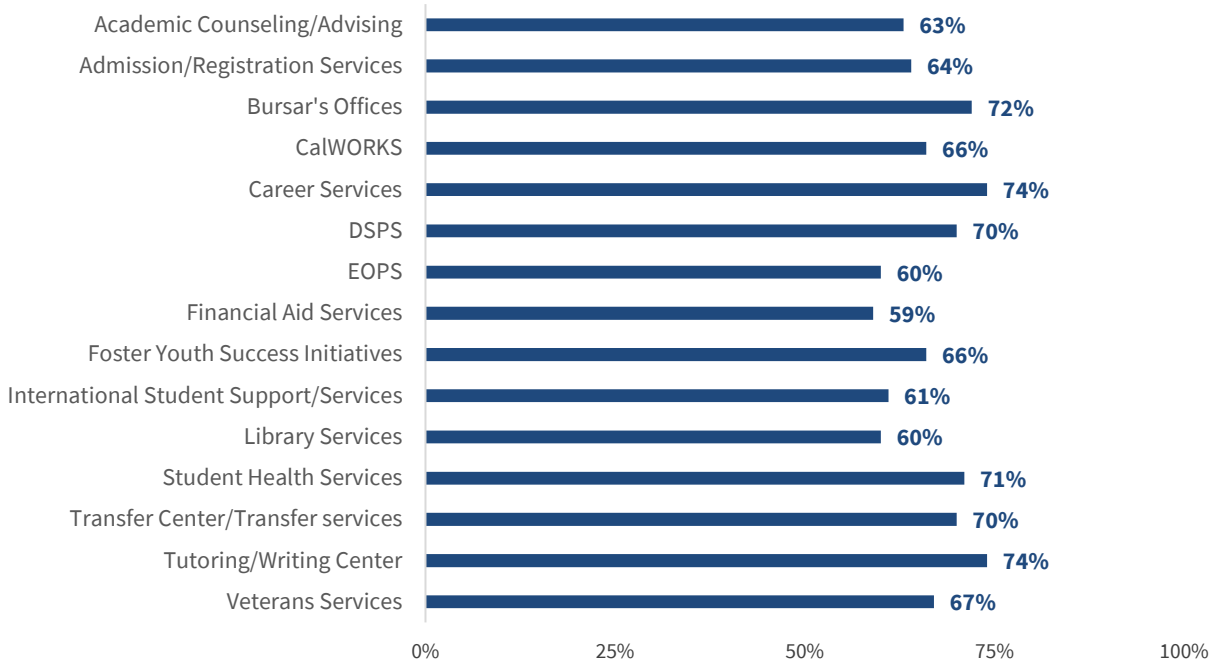
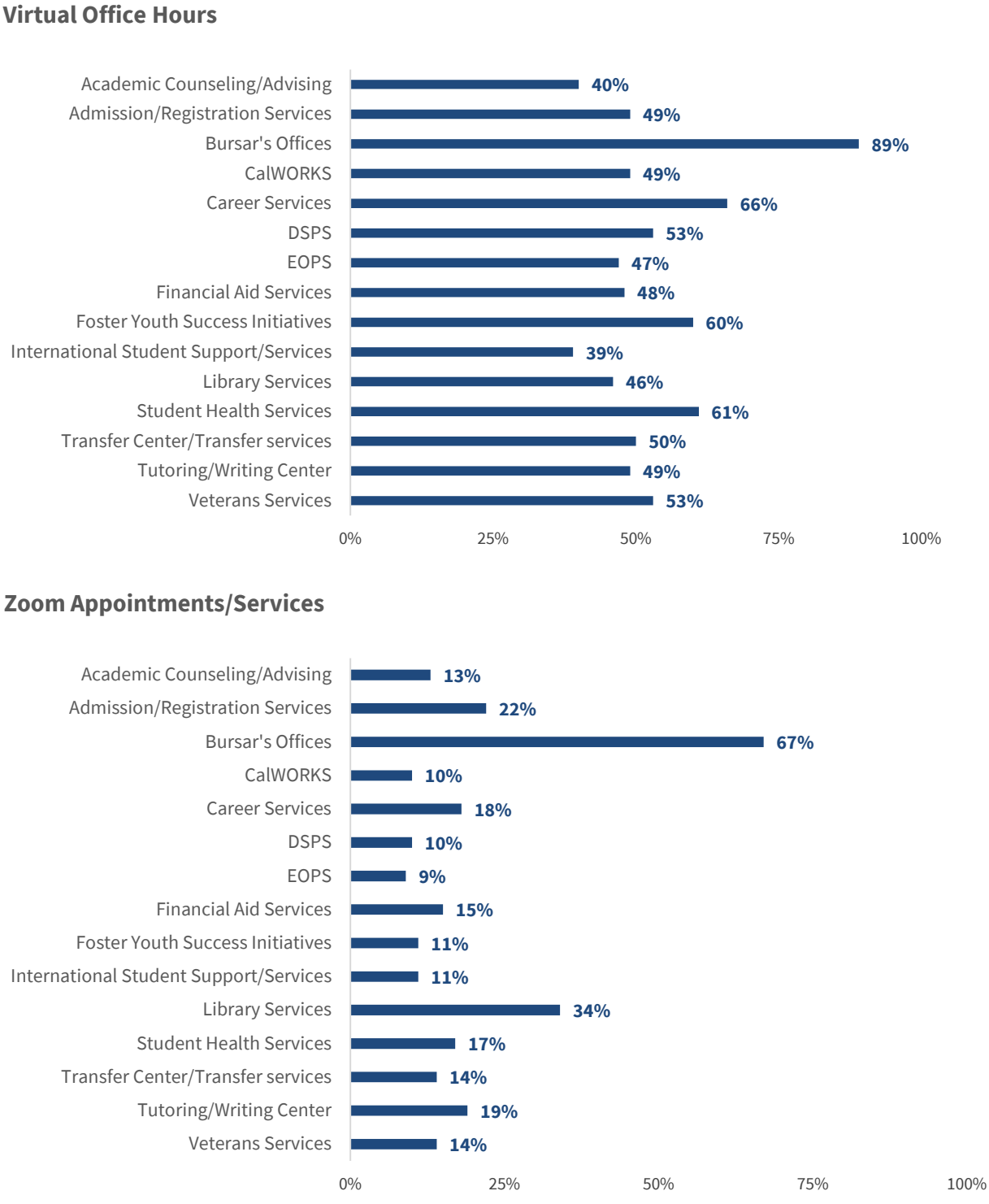


Figure G2b

Modalities of Support Offerings by Service Area – Virtual Office Hours and Zoom Appointments/Services



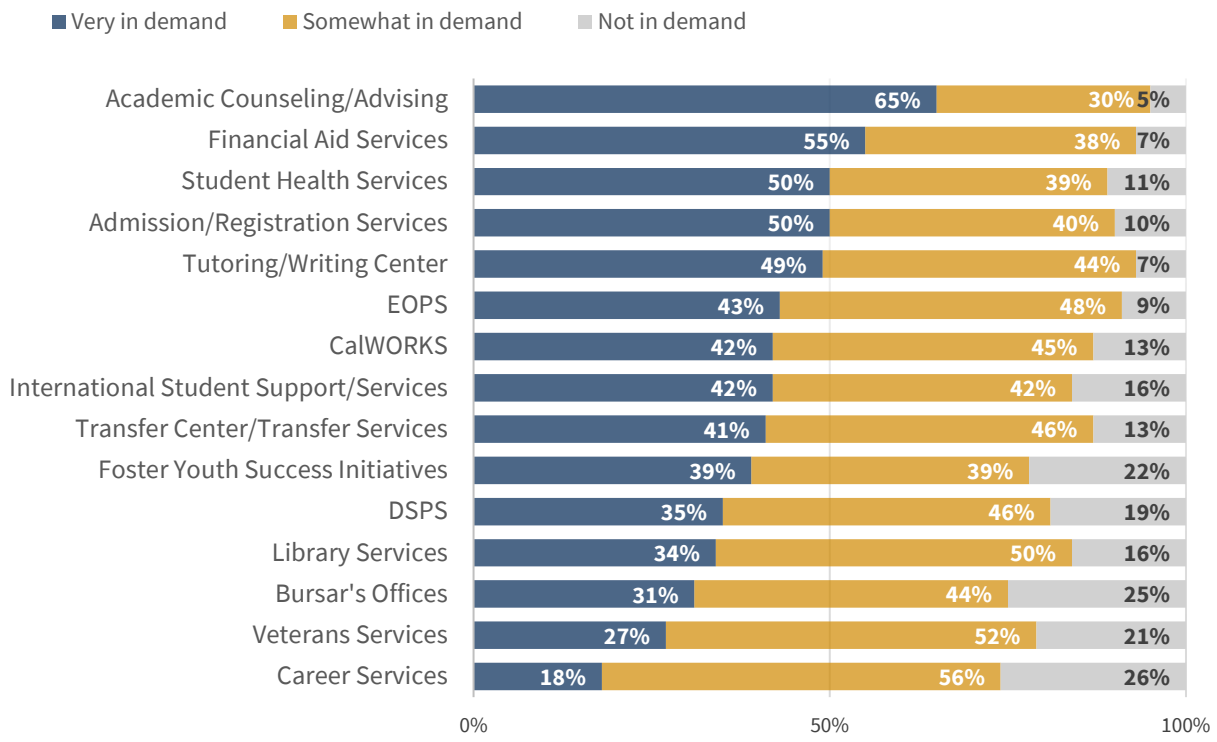
KEY FINDING #G3: The availability of online services during evenings and weekends is limited, leaving nontraditional and working students underserved.

Survey respondents shared that the college typically decided which services to offer online and in what formats based on student demand (87%) and the availability of technology and tools to support delivery (70%), with staff availability and interest also influencing decisions (54%).

Demand for online student services varies widely as shown in Figure G3. Academic counseling and advising see the highest demand, followed by financial aid, admission/registration, and student health services. Moderate demand is common for tutoring, writing centers, and specialized programs like EOPS and transfer centers. While library services are widely used, specialized services such as veterans programs and foster youth initiatives show a mix of moderate and lower demand. Career services and bursar's offices generally see less urgency but maintain steady usage for routine needs.

Figure G3

Demand for Online Options by Student Support Services

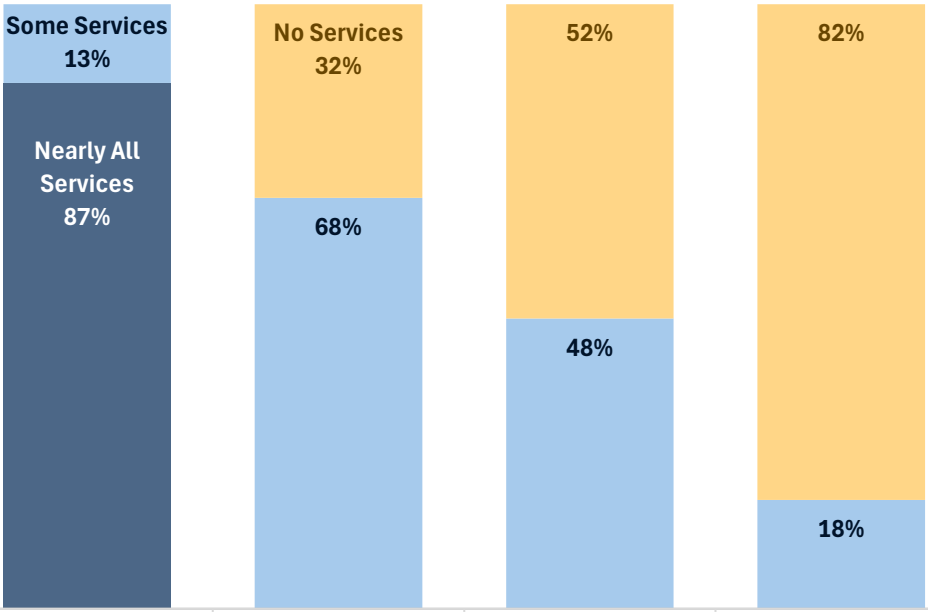


Demand for Online Options by Student Support Services	Very in demand	Somewhat in demand	Not in demand
Academic Counseling/Advising	65%	30%	5%
Financial Aid Services	55%	38%	7%
Student Health Services	50%	39%	11%
Admission/Registration Services	50%	40%	10%
Tutoring/Writing Center	49%	44%	7%
EOPS	43%	48%	9%
CalWORKS	42%	45%	13%
International Student Support/Services	42%	42%	16%
Transfer Center/Transfer Services	41%	46%	13%
Foster Youth Success Initiatives	39%	39%	22%
DSPS	35%	46%	19%
Library Services	34%	50%	16%
Bursar's Offices	31%	44%	25%
Veterans Services	27%	52%	21%
Career Services	18%	56%	26%

The availability of online student support services varies significantly depending on the time of access (see Figure G4). During weekdays between 8 a.m. and 6 p.m., nearly all services (87%) are accessible online, with only 13% of colleges offering "some" services and no colleges reporting no availability. Outside these hours, availability drops substantially. On weekdays before 8 a.m. or after 6 p.m., 68% of institutions provide some services online, while 32% report no availability of online services. Weekend access is even more limited, with only 48% of institutions offering some online services and 52% reporting none. On-campus closure days, such as holidays, the majority of institutions (82%) offer no online student support services, and only 18% provide partial availability.

Figure G4

Availability of Online Student Support Services



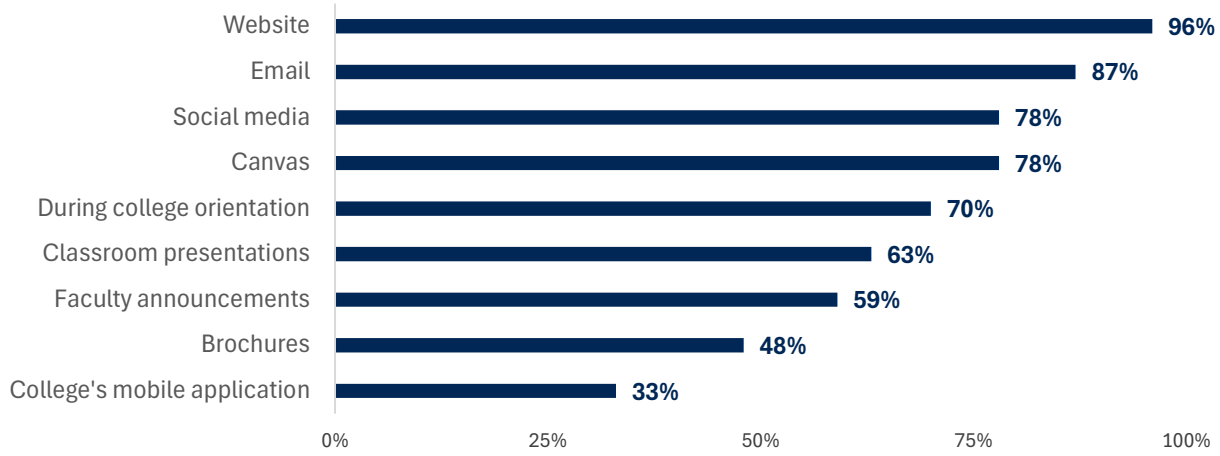
	Weekdays Between 8am-6pm	Weekdays Before 8am or after 6 pm	Weekends	Campus Closed (e.g., holidays)
No Services		32%	52%	82%
Some Services	13%	68%	48%	18%
Nearly All Services	87%			

KEY FINDING #G4: Marketing efforts of online supports primarily focus on websites, while channels like social media and online applications remain underutilized.

As shown in Figure G5, colleges use a variety of methods to market and communicate online support services to students, with websites being the most common channel (96%). Email is also widely utilized, with 87% of institutions relying on it for outreach. Both Canvas and social media platforms are used by 78% of institutions, emphasizing their role in reaching students where they are most active. Other methods include promoting services during college orientation (70%) and through classroom presentations by student support staff (63%). Faculty announcements are leveraged by 59% of institutions, while brochures are used by nearly half (48%). Mobile applications are less commonly used, with 33% of institutions incorporating them into their communication strategies.

Figure G5

Marketing Mediums for Student Support Services

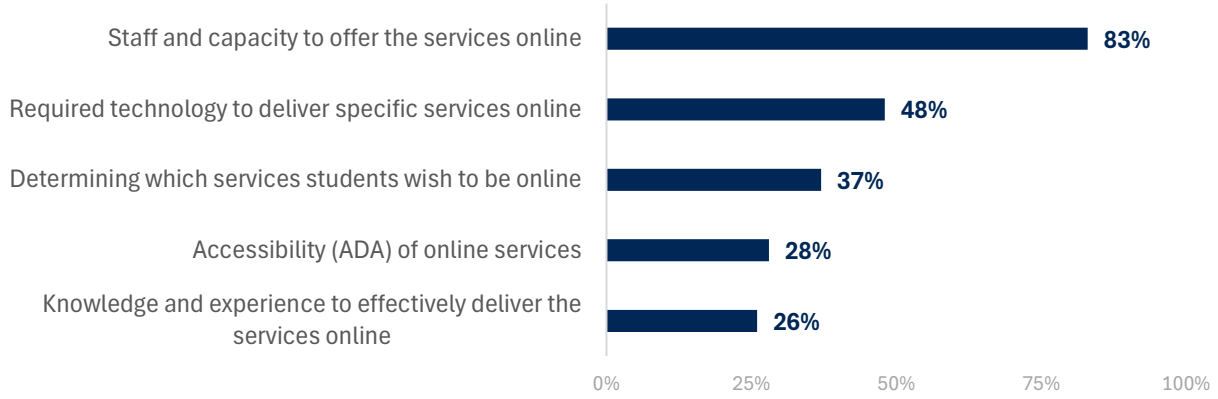


KEY FINDING #G5: Colleges face barriers like staff shortages, outdated technology, and ADA compliance issues that hinder the implementation of online services.

Institutions reported facing several challenges in providing support services to online learners. The most commonly reported issue is staff capacity limitations, with 83% of respondents identifying it as a barrier. Nearly half (48%) cite difficulties with the required technology to deliver specific services online, while 37% report challenges in determining which services students prefer to access online. Accessibility concerns, including American Disabilities Act (ADA) compliance, affect 28% of institutions, and 26% highlight a lack of knowledge and experience in effectively delivering online services (see Figure G6).

Figure G6

Challenges to Providing Support Services to Online Learners



When it comes to leveraging AI to support services remotely, 29% of colleges (n=13) reported doing so. Among these colleges, chatbots were most frequently cited (100%) as being used, though 39% (n=5) were using academic planning and 15% (n=2) were using AI tutoring.

CONCLUSION

The rise of online learning has transformed the landscape of student support services in community colleges, presenting both opportunities and challenges. While colleges are making strides in adapting services for online learners, the journey toward fully accessible and effective virtual support is far from complete.

Centralized hubs for online services, or "virtual one-stop shops," are still the exception rather than the rule, with only a small fraction of colleges providing students with seamless access to critical resources. Even where online services like academic advising and tutoring are widely available, their depth and usability often vary. Features such as live chat and virtual office hours are common, but more interactive elements—such as real-time financial aid assistance or robust international student support—are less consistently offered.

Students' demand for services remains highest in areas like academic advising and financial aid, yet availability outside traditional hours is limited, and weekends often see a near-complete absence of support. At the same time, institutions face persistent barriers, including staffing shortages, technological challenges, and difficulties ensuring accessibility for all students. Innovations such as AI-powered tools have shown promise but are not yet widespread.

ACTIONABLE INSIGHTS

Based on the survey's findings, several actionable steps can be taken by the CCC system to improve the online learning experience for community college students and support student support services with these efforts.

ACTIONABLE INSIGHT #G1: Create or enhance centralized online hubs with intuitive design and seamless integration to improve accessibility and streamline navigation for students.

Creating or enhancing an intuitive, centralized online hub where all student support services are easily accessible can vastly improve the user experience. The hub should integrate academic, technical, personal, and career resources in one location, offering streamlined navigation and a consistent user interface. A well-designed hub ensures that students are not overwhelmed with information or forced to navigate multiple platforms to access necessary services.

ACTIONABLE INSIGHT #G2: Standardize the depth and accessibility of key support services.

As online learning continues to evolve, institutions should recognize that students face unique challenges beyond academics. Expanding key support services will ensure that students, particularly those in remote settings, have access to the necessary guidance and support. Systemwide guidelines would be helpful for delivering online services with clear expectations for accessibility, usability, and depth. Include mandatory availability for high-demand areas such as academic counseling, financial aid, and tutoring.

ACTIONABLE INSIGHT #G3: Extend service hours and adopt asynchronous and 24/7 tools, such as chatbots and self-help resources, to accommodate students' varied schedules.

Online students often juggle multiple responsibilities, including work, family, and other commitments, and may find it difficult to access support services during traditional business hours. Extending service hours and adopting asynchronous tools is a strategic move to meet the needs of these diverse student populations. Implementing 24/7 chatbots can provide immediate responses to common inquiries, while self-help resources allow students to find answers at any time, helping them stay on track with their studies. Asynchronous services, such as video tutorials, discussion forums, and FAQs, can further support students who may not be able to attend live sessions.

ACTIONABLE INSIGHT #G4: Broaden marketing efforts beyond websites.

Colleges are making significant strides in promoting online support services through their websites, but they must expand their marketing efforts to include platforms that students are already engaged with, such as social media and apps. Social media channels can be powerful tools for reaching students where they already spend time and sharing timely, relevant information about available services. Similarly, integrating support resources directly into the LMS can make it easier for students to access help without leaving their coursework environment. Leveraging these high-engagement channels not only increases awareness but also encourages students to take advantage of the services offered, ultimately enhancing the student experience and promoting success in online learning environments. Colleges should develop an integrated marketing strategy that includes targeted campaigns on social media, in-app notifications, and Canvas announcements. Partner with faculty and student ambassadors to raise awareness during class sessions and orientations.

ACTIONABLE INSIGHT #G5: Invest in staffing, modernize technology infrastructure, and ensure ADA compliance across all platforms to provide equitable and efficient support.

To ensure that support services are both effective and equitable, colleges must prioritize investing in staffing and technology. Expanding the number of qualified staff members who are specifically trained in online support services can provide more personalized attention to students. In addition,

modernizing the technology infrastructure is essential to meeting the demands of today's digital learners and could ensure that platforms and tools are fast, secure, and compatible across devices. Online platforms need to be ADA-compliant, ensuring that students with disabilities can access services without barriers. By focusing on these investments, institutions can create a robust system that supports all students, fostering an environment where every learner has the opportunity to succeed.

SOURCE DETAILS

The RP Group sent the online student support services survey to each California community college's institutional research, planning, and effectiveness (IRPE) department on October 7, 2024. IRPE offices were charged with identifying the appropriate person at their college to complete the survey. The student support services survey contained 23 items (including five open-ended questions). To support the data collected in the survey, The RP Group also conducted a comprehensive analysis of each college's website, exploring whether or not the college had a student support hub and the nature of student support services offered online at each college. A standardized matrix was used to capture data on each college's offerings.

SAMPLE

A total of 52 unique institutions completed the survey. The majority of survey completers (82%) were the college's vice president/vice chancellor, though 12% were college deans and 2% were directors. Additionally, data from each college's website were collected for all 116 CCCs.

APPENDIX H: Research Brief of the Causal Effects of Online Course-Taking on Student Completion

KEY FINDINGS

- Online course-taking positively impacts the number of units earned and degree completion.
- There does not appear to be a negative impact on transfer to a university based on the modality of courses students take.
- The effect of online course-taking does not appear to differentially impact different student groups.

Studies on the effectiveness of online education to facilitate access to and success in higher education have produced mixed results in terms of its effectiveness across a variety of outcomes including short-term outcomes (i.e., completion in a given course) and long-term outcomes (i.e., completion of a degree) (see Bettinger & Loeb, 2017; Figlio, et al., 2013; Fischer et al., 2022; Hart et al., 2018; Xu & Jaggars, 2013; Xu & Xi, 2019).

Despite the mixed findings regarding the effectiveness of online learning, online education has been crucial in enabling the continued offering of educational services during disruptions caused by the COVID-19 pandemic (Hodges et al., 2020), allowing higher education institutions to maintain classes, and helping students stay on track to complete their educational goals.

During the pandemic, the proportion of online course offerings exceeded that of traditional in-person course offerings, and the proportions of online course offerings post-pandemic still exceeded their pre-pandemic percentages (CCCCO Distance Education Report, 2023). With the rapid and widespread adoption of online learning during the pandemic, any analyses examining the effect of online course-taking on student completion will make it difficult to isolate the true impact of online learning on student outcomes. Essentially, the pandemic created an unusual and potentially distorting situation making it difficult to determine if observed trends in student completion are due to the specific characteristics of online learning itself and the availability of online offerings, or if they are influenced by the unique circumstances and challenges of the pandemic (e.g., remote learning, social isolation).

To isolate the effects of online course-taking on student completion, we narrowed to a cohort of students in a timeframe not fully affected by the pandemic. Specifically, we examined the effect of taking online courses on units earned, degree completion, and transfer to a university within four years of initially enrolling at a community college for four cohorts of students who first enrolled in the fall term between 2013 and 2016.

Two research questions guided these analyses:

1. What is the impact of online course-taking intensity on degree completion and transfer to a university?

2. How does online course-taking intensity affect degree completion and transfer for historically underserved student populations?

To examine the causal impact of online course-taking, we leveraged observational data containing student records that are collected by the California Community Colleges Chancellor's Office (CO) to build a statistical model that produces unbiased estimates of the causal relationship between online course-taking and goal attainment that are comparable to Institute of Education Sciences (IES) standards for evidence (What Works Clearinghouse [WWC], 2022).

We employed a statistical model called an instrumental variables estimation (IVE), a model that produces a local average treatment effect (LATE) by honing in on the part of the explanatory variation in or isolating the effects of online course-taking that is similar to honing in on the effect of a treatment group in an random-control trial (RCT) that is called compliers (the group that complies to the treatment or intervention) (WWC, 2022). This isolation is done by producing a two-stage model that first generates the predicted values of the treatment variable based on variables (or instruments) that are associated with the treatment but not directly associated with the outcome of interest. Using the predicted values of the treatment, we then estimated the effect of the treatment variable on the outcome of interest (the second stage).

The following model incorporates control variables at the student and college levels that have been found to be associated with completion (see Fischer et al., 2022) to increase our accuracy and precision in measuring the effect of online course-taking. In the first stage, we predicted students' online course-taking intensity using the percentage of online courses offered by the college, along with student-level and college-level covariates (see Table H1 for descriptives for the variables in the models).

First Stage Equation:

$$onlineintensity_{ic} = \alpha + \varphi onlineoffering_c + \gamma X_i + \theta Y_c + \mu_{ic}$$

$onlineintensity_{ic}$ is the percentage of credit online courses a student in a given cohort took within four years of initial credit enrollment

$\varphi onlineoffering_c$ is the interaction between the percentage of online courses available to students across the four years at the college they initially enrolled in

X_i is a vector of student covariates (e.g., ethnicity, first-generation status)

Y_c is a vector of covariates at the college level (e.g., college size, percentage of females)

In the second stage, we used the fitted values from the first stage to predict the outcomes of interest, after accounting for miles to the nearest community college and the percentage of online

courses across four years offered at the college students initially enrolled at, to create a model where online course-taking will be an unbiased estimate of the impact of completion.

Second Stage Equation:

$$Completion_i = \alpha + \beta \widehat{online}_{ic} + \gamma X_i + \theta Y_c + \mu_{ic}$$

$Completion_{ic}$ is the outcome variable of student *i* for three primary outcomes: degree completion, transfer to a university, and credit units earned within four years of initial credit enrollment.

Table H1 provides the summary descriptive statistics for each of the variables in this model. All analyses have clustered standard errors at the college level to account for differences between and within colleges that affect students' educational experiences and outcomes.

To explore differences in outcomes by various student characteristics, the models above are replicated by interacting online course-taking intensity with the following student characteristics/indicators: Black/African American, Hispanic, first-generation, and low-income (as measured by need-based aid receipt).

Table H1

Summary Descriptives of Variables in the Instrumental Variable Estimation (Fall Cohorts between 2013 and 2016)

Variable	Mean	Standard Deviation
Student-Level Covariates		
Age[1a]	19.72	5.30
Ethnicity[13b]		
American Indian/Alaska Native	0.03	
Asian	0.18	
Black or African American	0.07	
Hispanic	0.49	
Pacific Islander or Hawaiian Native	0.02	
White	0.38	
Gender: Female[1a]	0.51	-
First-Generation Status[1a]	0.25	
Veteran/Military[2a]	0.03	

Variable	Mean	Standard Deviation
Foster Youth[2a]	0.02	
Financial Aid Recipient[2a]	0.71	
EOPS[2a]	0.11	
DSPS[2a]	0.07	
In-State Zip[1a]	0.98	
Local Grade Point Average[2b]	2.14	1.53
College-Level Characteristics[1]		
College Size		
1 = less than 10,650 students	0.08	
2 = 10,650 - 25,004 students	0.42	
3 = More than 25,004 students	0.52	
Proportion of American Indian/Alaska Native, Asian, Black or African American, Hispanic, and Pacific Islander/Hawaiian Native[a]	0.68	0.15
Average age of students[a]	25.85	1.79
Proportion of Female[b]	0.53	0.05
Proportion of First Generation[b]	0.24	0.17
Proportion of Financial Aid Recipients[b]	0.31	0.08
Rurality Indicator[1]		
UED Tier 0	0.84	-
UED Tier 1	0.17	-
UED Tier 2	0.14	-
Predictor Variable		
Proportion of online courses taken across four years[a]	0.19	0.21
Instrument		

Variable	Mean	Standard Deviation
Percentage of online course offered across four years[2a]	18.38	149.03
Outcome Variables[2]		
Degree completion[b]	0.30	0.46
Transfer to a university[b]	0.20	0.40
Units earned[a]	61.12	37.50
Time to degree[a]	3.66	1.50
Time to transfer[a]	3.63	1.73
Total Sample	355,133	

Notes. [1] Based on initial credit term/year

[2] Across four years of students' initial credit term/year

[3] Based on inclusive coding method where students are flagged if they marked that identity. Therefore, the percentages across ethnic groups will not equal 100.

[a] Continuously scaled variable.

[b] Dichotomous variable: 0 = No, 1 = Yes.

KEY FINDING #H1: Online course-taking positively impacts credit units earned.

The average number of credit units completed by this sample was 54.54. Based on this analysis, online course-taking appears to positively impact the total number of credit units a student earns. Based on these estimates, the average credit unit accumulation across four years for a student who took all of their credit courses online is 26 more credit units than a student who did not take any online credit courses across four years (see Table H2).

Table H2

Relationship Between Online Course-Taking Intensity and Credits Units Earned, Earning a Degree, and Transfer Within Four Years of Initial Enrollment

	First-stage analysis	Second-stage analysis		
	Online Course-Taking	**Credit Units Earned**	**Degree Completion**	**Transfer**
	Co-efficient (SE)	Co-efficient (SE)	Co-efficient (SE)	Co-efficient (SE)
Instrument: Proportion of Online Courses Offered Across Four Years	0.723*** (-0.093)			
Instrumented Variable: Online Course-Taking Intensity Across Four Years		26.173* (-11.554)	0.165* (-0.082)	-0.032 (-0.076)
Student Characteristics	X	X	X	X
College Characteristics	X	X	X	X
F-statistic of IV	60.12***			
Total *N*	354,399	354,399	354,399	354,399

Notes: Invreg2 analyses include student and college covariates (see Table 1 for the full list), with standard errors clustered by college. Cohort fixed effects were not included because of the overlap in years between cohorts based on the variables used for the instruments and covariates.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

KEY FINDING #H2: Online course-taking positively impacts degree completion.

The average degree completion within four years for this sample was 19%. Based on this analysis, online course-taking appears to positively impact degree completion within four years. Based on the analyses, a 1% increase in online course-taking intensity across four years is associated with a 17% greater chance of successfully completing a degree within four years.

KEY FINDING #H3: Online course-taking does not statistically impact transfer to a university.

The average transfer to a university within four years for this sample was 20%. Based on this analysis, online course-taking does not appear to statistically impact transfer to a university. While we found no significant relationship between online course-taking and transfer, this finding suggests that there do not appear to be barriers to transfer due to the modality of the courses taken or completed by students.

KEY FINDING #H4: The effect of online course-taking does not appear to differentially impact different student groups.

In follow-up analyses, we examine whether the effect of online course-taking varies for students who identify as American Indian/Alaska Native, Black/African American, Hispanic, Pacific Islander/Hawaiian Native, receive need-based aid (i.e., low-income status), identify as female, are 25 years of age or older, or have a disability (see Table H3).[13] Results from these analyses showed no significant differences in the impact of online course-taking intensity on their units earned or degree completion within four years. The only exception is for Black/African American students, who earned an average of 20 credit units fewer than their peers within four years. However, there were no significant differences in degree completion, suggesting the impact of online course-taking intensity is similar across all of the subgroups examined.

[13] The specific subgroup characteristics were identified based on statewide online course enrollment patterns. See Appendix D Research Brief on Statewide California Community College Trends on Online Education Between 2013 and 2023

Table H3

Heterogeneity Analysis of the Relationships of Online Course-Taking Intensity

	Panel A: American Indian/ Alaska Native	Panel B: Black/ African American	Panel C: Hispanic	Panel D: Pacific Islander/ Hawaiian Native	Panel E: Low-Income Status	Panel F: Female	Panel G: Disability Status	Panel H: Age 25 Years and Older
First-Stage Analysis - Credit Units Earned								
Instrument: Proportion of Online Courses Offered Across Four Years	.723*** (.093)	0.728*** (-0.092)	.714*** (.104)	.721*** (.093)	.738*** (.064)	.637*** (.108)	.727*** (.095)	.751*** (.062)
Instrument: Proportion of Online Courses Offered Across Four Years X American Indian/Native Alaskan Students		-.003 (.002)	-.001 (.001)	-.001* (.000)	-0.035* (0.018)	-.025* (.011)	- 0.001*(0.002)	-.011 (.006)
Student Characteristics	X	X	X	X	X	X	X	X
College Characteristics	X	X	X	X	X	X	X	X
Second-Stage Analysis - Degree Completion								
Instrumented Variable: Online Course-Taking Intensity Across Four Years	26.541* (11.653)	27.734* (11.900)	29.015* (14.195)	26.396* (11.589)	37.574* (17.571)	29.439* (13.012)	25.490* (11.584)	29.524* (12.144)
Instrumented Variable: Online Course-Taking	-11.975 (6.505)	-20.135* (8.399)	-6.301 (10.009)	-14.410 (9.283)	-15.688 (11.709)	-5.959 (4.184)	12.488 (6.981)	-24.699* (8.813)

	Panel A: American Indian/ Alaska Native	Panel B: Black/ African American	Panel C: Hispanic	Panel D: Pacific Islander/ Hawaiian Native	Panel E: Low-Income Status	Panel F: Female	Panel G: Disability Status	Panel H: Age 25 Years and Older
Intensity Across Four Years X Group								
Student Characteristics	X	X	X	X	X	X	X	X
College Characteristics	X	X	X	X	X	X	X	X
Second-Stage Analysis - Transfer								
Instrumented Variable: Online Course-Taking Intensity Across Four Years	.169* (.082)	.172* (.084)	.124 (.087)	.166* (.082)	.074 (.1057196)	.137 (.085)	.159 (.082)	.179* (.088)
Instrumented Variable: Online Course-Taking Intensity Across Four Years X Group	-.136 (.099)	-.089 (.081)	.092 (.066)	-.050 (.094)	.126 (.067)	.051 (.046)	.106 (.085)	-.100 (.079)
Student Characteristics	X	X	X	X	X	X	X	X
College Characteristics	X	X	X	X	X	X	X	X
Total *N*	**354,399**	**354,399**	**354,399**	**354,399**	**354,399**	**354,399**	**354,399**	**354,399**

Notes. Ivreg2 analyses include student and college covariates (see Table 1 for the full list), with standard errors clustered by college and also examined by college and cohort year with similar results. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

CONCLUSION

Based on these analyses, online course-taking positively impacts credit unit earning and degree completion for all student groups examined, including those who identify as Black/African American, Hispanic, low-income, female, first-generation, 25 or older, or have a disability. While Black/African American students earned fewer units, there was no significant difference in their degree completion rates. Moreover, online course-taking does not appear to negatively impact transfer to a university, suggesting that there do not appear to be barriers to transfer based on the modality of courses students are enrolled in at the community college.

SOURCE DETAILS

These analyses were based on statewide Chancellor's Office MIS records for a cross-sectional sample of four fall-term cohorts of students who first enrolled in credit courses between 2013 and 2016 and who had the following characteristics: 1) were degree- or transfer-seeking based on their declared educational goal, 2) completed at least 12 credit units within the four-year timeframe, and 3) were not identified as dual or concurrently enrolled high school students at the time of initial enrollment *or* who had earned a degree or was enrolled at a university prior to their initial enrollment (n = 355,133). More recent cohorts were included in the analyses because of the overlap of their potential coursework during the COVID-19 pandemic, when the vast majority of course offerings were online. Credit unit attainment, degree completion, and transfer within four years of initial enrollment were tracked for each cohort.

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About The RP Group

Mission: The Research and Planning Group for California Community Colleges (The RP Group) is a leader that supports equitable outcomes for minoritized and marginalized students through race-conscious, equity-minded research, planning, and professional development. We uplift student voices and empower researchers and planners to improve institutional effectiveness by dismantling systemic barriers and injustices.

Services: Research, evaluation, planning, professional development, and technical assistance—designed and conducted by CCC practitioners

Organization: 501(c)3 with roots as membership organization

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