



Wisconsin  
Evaluation  
Collaborative

September 2022

# Academic and Career Planning Evaluation

*2021-22*



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## About the Wisconsin Evaluation Collaborative

The Wisconsin Evaluation Collaborative (WEC) is housed at the Wisconsin Center for Education Research at the University of Wisconsin-Madison. WEC's team of evaluators supports youth-serving organizations and initiatives through culturally responsive and rigorous program evaluation. Learn more at <http://www.wec.wceruw.org>.

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## Copyright Information

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## Section I

# Introduction

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# Introduction

The following is the final report for the 2021-22 Evaluation of Academic and Career Planning (ACP) conducted by the Wisconsin Evaluation Collaborative (WEC), part of the Wisconsin Center for Education Research (WCER) at the University of Wisconsin-Madison, for the Wisconsin Department of Public Instruction (DPI).

## Purpose of Evaluation

This 2021-22 evaluation report examines findings from Year 7 of the ACP statewide evaluation, which WEC has conducted since the initial pilot phase of ACP starting in 2015-16. Previous annual evaluations focused on the ACP pilot and the statewide implementation process. In 2020-21, annual case studies began focusing on the equitable access to and participation in ACP-related activities, particularly in large, multi-high school districts. In 2021-22, we continue the examination of implementation as well as examine ACP-relevant outcomes and report initial findings from the case studies. Additional implementation data and stakeholder feedback will be examined in 2022-23 when the biannual statewide survey will next be administered.<sup>1</sup>

Specifically, during 2021-22, WEC built upon the mixed methods evaluation that took place during prior years, continuing the annual analysis of statewide administrative data from DPI through 2020-21 (the most recent year available), which WEC used to analyze logic model outputs and outcomes to compare to baseline data for longitudinal analysis. This year, however, DPI began focusing on the broader concept of career readiness components which includes ACP, in addition to other career readiness efforts such as career pathways and postsecondary transition planning for students with disabilities. These efforts, known collectively as Wisconsin Career Readiness, spurred a revision of WEC's evaluation approach to assess additional activities and outputs. To do so systematically, WEC advised revisions to the original logic model to include additional inputs, activities, and outcomes, and did so by facilitating logic model development sessions with key partners at DPI and Cooperative Educational Service Agency (CESA) ACP coordinators. The evaluation plan was then revised to align to the new version of the logic model, which can be found in [Appendix A](#).

WEC also continued its qualitative work conducting case studies as in prior years. Initial findings from case studies in two large Wisconsin districts are reported herein, and this work will continue in Fall 2022. Reports detailing the findings of future work will be forthcoming.

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<sup>1</sup> Initially, the survey was fielded on an annual basis, but it shifted to a bi-annual schedule starting this year.

## Evaluation Questions

The overarching evaluation questions for the statewide evaluation were slightly updated for this year and can be found on the following page.

The specific ACP implementation and outcome components the evaluation examines include the following:

### State and local level:

1. High quality district and school ACP implementation
  - a. Regular, ongoing, and dedicated time for ACP activities
  - b. Family engagement in student ACPs and career readiness
  - c. Equitable participation in career readiness and ACP
  - d. Regular, ongoing, supportive, and safe student relationships with adults
2. Staff buy-in and all-school culture of ACP
3. Business and community engagement/work-based learning participation
  - a. Schools offering Regional Career Pathways

### Student level:

1. Student participation in work-based learning (WBL) and Industry Recognized Credentials (IRCs)
2. Student participation in Advanced Placement (AP)/International Baccalaureate (IB) and dual enrollment
3. Student engagement in Xello
4. Student Career Technical Education (CTE) concentration
5. Student participation in Career Pathways
6. Student preparedness to enter post-secondary education and training
7. On-time high school completion
8. Student participation in and completion of post-secondary education and training

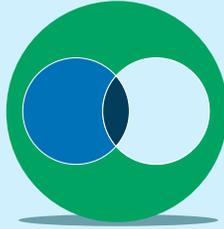
Because the statewide ACP survey will not be fielded again until the 2022-23 school year, this report may not be able to examine all state and local level measures at this time.

# Evaluation Questions



1.

How has career readiness implementation across districts and schools changed over time, including any effects that COVID has had on career readiness activities, processes, and policies?



2.

What are the varieties of career readiness activities across different school and district contexts?



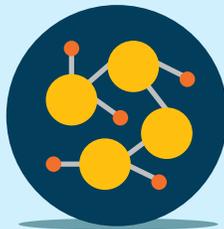
3.

What are stakeholder (administrators, school counselors, teachers, students, families) perceptions about career readiness?



4.

What, if any, changes have occurred in terms of student outcomes?



5.

What, if any, associations between career readiness activities and outcomes can be measured at school or student levels?

# Methodology

To address the evaluation questions, WEC evaluators designed a study comprised of two major components:

1. Statewide implementation and outcome data
2. Case studies

## Statewide Implementation and Outcome Data

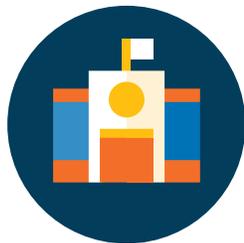
To evaluate the implementation of certain career readiness activity components as well as the appropriate outcomes, WEC requested the following statewide administrative data:

- Student participation in work-based learning and IRCs
- Student enrollment in dual enrollment and college-level industry certification courses
- Student enrollment in AP/IB courses
- Xello lesson completion
- Student CTE concentrator status
- Student participation in Career Pathways
- ACT scores
- High school completion status
- Post-secondary enrollment

WEC received the majority of these sources for all years 2014-15 through 2020-21. There were, however, restrictions on some of the requested data. For student participation in work-based learning (WBL) activities, student participation in dual-credit courses, and student participation in industry-recognized credentials (IRCs) certification courses, the data source that provided these results, the Career and Technical Education Enrollment Reporting System (CTEERS), transitioned to a new Career Education data reporting system in 2018-19. As a result of this transition, this report only examines implementation of these data starting in 2018-19. WEC received Xello data for 2019-20 and 2020-21, but these data did not include linkable information to other DPI administrative data. Thus, the evaluation was not able to examine Xello participation by student subgroups. Due to the recent update to the logic model, CTE concentrator status was added as a new metric and will be included in next year's report. In addition, DPI does not currently collect student-level information on participation in Career Pathways, and as a result, this report does not examine this metric.

This evaluation also continues to track specific measures to better understand associations between ACP implementation and the impact on student outcomes.

These outcomes include:



**Student preparedness to enter post-secondary education as measured by ACT scores**



**On-time high school completion as measured by four-year high school completion rates**



**Student participation in post-secondary education as measured by post-secondary enrollment in the fall following high school completion**

To understand how ACP is associated with the outcomes noted above, the evaluation must identify a comparison group of non-ACP students and schools. Because ACP was first implemented statewide in 2017-18, there are no non-ACP students and schools in that year or the years following that could be used as a comparison. To account for this, the evaluation used a pre/post design to follow and compare the same schools both before and after exposure to ACP implementation. The treatment group was all schools in 2017-18 through 2020-21 (as ACP is statewide). For a comparison group, the evaluation used all of the same schools throughout the state in the years prior to ACP implementation. To account for any long-term trends occurring throughout the state, the analysis used three prior years of baseline data on the intended outcomes (specifically 2014-15 through 2016-17). To conduct this outcomes analysis, WEC received data on these outcomes from 2014-15 through 2020-21. The evaluation then used multivariate regression models to estimate the associated impact of ACP on these outcomes while controlling for a variety of student- and school-level characteristics. The models compared each outcome in 2017-18, 2018-19, 2019-20, and 2020-21 to the previous three years of outcomes within each school to estimate the impact associated with ACP on these outcomes in each of those four years of implementation. The student-level controls included gender, race/ethnicity, special education status, economic status (as measured by free or reduced price lunch eligibility), English learner (EL) status, and grade level (as appropriate for the outcome). The analysis included school-level controls for locale description, including indicator variables for city, suburb, town, and rural.

In addition to examining the overall change in these outcomes, the evaluation also included an analysis to explore associations for levels of ACP implementation. The evaluation identified levels of ACP implementation from the 2017-18 through 2020-21 ACP implementation building-level surveys. Specifically, four different measures of ACP implementation were identified: infrastructural element implementation, equitable access implementation, dedicated ACP time implementation, and student activity component implementation. For each of these implementation metrics, the evaluation combined all relevant survey item responses into a single score with values ranging from 0 (not yet started) through 3 (institutionalized). Implementation scores near 1 indicate the initiated level, and scores near 2 indicate the implemented level. Since not all schools responded to each year of the survey, if a school responded in any one year, the evaluation assigned response values for that school to other missing years. The evaluation did not include schools not responding to any year of the survey in this analysis.

For further information about the quantitative methodology, refer to [Appendix B](#).

## Case Studies

In 2021-22, evaluators continued conducting two case studies in large, multi-high school districts, focusing on equitable access and participation in high-leverage activities such as WBL, dual credit/enrollment, AP courses and exams, and IRCs. In these case studies, the focus was on access and participation among students in traditionally under-represented groups. Because of a variety of contextual differences, district needs, and availability, the two case studies were designed somewhat differently, with somewhat different approaches to siting the data collection, iterative approaches to data triangulation, and somewhat different interview and focus group protocols. In District A's case, district leaders approached DPI for advice on addressing disparities in student access and participation in career readiness activities, and eventually the district agreed to participate in a case study in order to learn more about their specific situation and stakeholders' needs. In District B, WEC evaluators were awarded a researcher/practitioner collaboration grant that enabled them to gain access to the district and collaborate on a project also intended to address inequities in ACP/career readiness. District B, however, had already engaged in extensive self-study to help identify barriers to participation in career readiness activities and wanted to be able to identify and evaluate actionable strategies to address barriers and improve their program, particularly for students of color.

In District A, the case study data collection included document analysis, interviews, and focus groups. Before embarking on data collection, evaluators conducted two activities. To inform the questions WEC would ask administrators and teachers in interviews and focus groups, evaluators reviewed district documentation on ACP-related programming and priorities. WEC also decided to select two high schools for building-level data collection, choosing those schools based on their demographic characteristics and gaps in participation in certain activities (Xello and IRCs). From there, the data collection itself proceeded in two phases. In the first phase, evaluators interviewed eight members of the district's central office staff to glean district-level perceptions of ACP. Only six of those interviews were planned initially; the process resulted in "snowball" sampling that identified additional potential interviewees. Later in the school year, WEC proceeded to the second phase: building-level interviews and focus groups. At each high school, evaluators spoke to the principal, counselors (four in total across both schools), and teachers recruited by the counselors (also four

in total). However, despite repeated efforts and outreach to school staff to organize student focus groups during the 2021-22 school year, WEC was unable to do so; thus, WEC could not capture student perceptions of ACP in District A, and recommended to the district that it intentionally solicit student voice in future years. Following the completion of these activities, data from interviews and focus groups were coded to identify key themes and representative quotes, and WEC presented findings to the district in two interim memoranda: one on the district-level interviews and one on the school-level interviews and focus groups.

In District B, the case study data collection included document analysis, interviews, focus groups, and was accompanied and informed by a literature review looking for research-based strategies that contribute to more equitable participation and outcomes in high-leverage career readiness activities. In Phase I, ten district leaders and external partners were interviewed in order to learn more about the "pockets of success" in the district as pertained to reducing or eliminating gaps in participation and outcomes related to career readiness activities. Interview data were coded and analyzed to look for key themes. The resulting findings were used to identify sites for further data collection and specific building-level staff to be interviewed. Three high schools and two middle schools were identified for closer study. Interviews with building leaders (principals, ACP coordinators, and/or school counselors; n=7) from these schools were conducted to learn more about the specifics of ACP implementation in their buildings. These building leaders were then invited to include their schools in a deeper dive in which teacher and student focus groups would be conducted. Due to COVID-19, changes in staffing and leadership, and other factors, staff and students from two high schools and one middle school were able to participate in the case studies. Ultimately, eight student focus groups and two staff focus groups were conducted, with a total of 53 participants. Data from these focus groups were coded to look for key themes and representative quotes. The combination of all data and the literature review were used to prepare a set of recommendations for the district. At the time of this report, district leaders, content experts, and other decision-makers are reviewing this set of recommendations to arrive at a "short-list" of recommendations which will be further subjected to stakeholder feedback, in the form of focus groups in Fall 2022. For the purposes of this report, the initial findings and recommendations are reported, with a particular eye toward findings that can benefit a wider audience.

## Limitations

There are limitations to the extent to which findings in this evaluation can be generalized. All measures of implementation and outcomes provided in this report are contingent upon available data. Additionally, results on these measures should only be used for comparison to ACP implementation and should not be used for purposes that are more general. It is likely that results presented on these measures differ slightly from those publicly reported by DPI due to differences in data availability and calculation practices. For all purposes other than ACP evaluation use, publicly reported data from DPI should take priority in standing.

While the outcome analysis provides the most rigorous possible evaluation given the statewide implementation of ACP and available data, there are several limitations. The primary limitation is that identification of ACP impact solely relies on changes between the 2014-15 through 2016-17 school years and the 2017-18 through 2020-21 school years. It is possible that the implementation of other programs and policies aligned with the start of ACP during 2017-18. Thus, the estimated impact of ACP may also include these program or policy changes. The second limitation occurs from prior implementation of ACP practices. As many schools likely implemented several ACP infrastructural and student activity components prior to official implementation in 2017-18, the estimated impacts are likely downward biased (toward zero) from using these prior years as a comparison. The third limitation is a change in outcomes occurring from COVID-19. It is likely that the pandemic also impacted the outcome results presented in this report. Instances of this possibility will be identified throughout the report. Due to these limitations, the results presented in this report should not be considered causal. For further information on limitations associated with the outcomes analysis, refer to Appendix B.

Case studies by definition are not intended to be generalizable beyond their specific context, but are useful in uncovering practices, ideas, perceptions, and other phenomena that may not have been considered, and can subsequently be further studied via an array of methods. Furthermore, case studies serve to ground the work in an evaluation by allowing evaluators to probe more deeply about the phenomena in question, to understand more clearly the perceptions, beliefs, and practices reported by the participants. Case studies and other qualitative methods can often answer the question “why?”, at least in the context being studied and from the specific participants’ perspectives, which in turn can often serve to flesh out findings derived from other methods. Consequently, while generalizability is typically not a goal of case studies or other types of qualitative inquiry, findings nonetheless add to the understanding of a larger context by examining the lived experiences of participants, how they make meaning of their experiences, and how that meaning influences their actions. Understandings such as these can be used to inform theory-building and other work that takes a larger population into consideration.

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## Section 2

# Findings

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# Findings

In this section, we present data and findings in three different categories. ACP Implementation examines the results of the evaluation pertaining to Evaluation Questions 1 and 2. Stakeholder Perceptions examines the results of the evaluation pertaining to Evaluation Question 3. ACP Outcomes examines the results of the evaluation pertaining to Evaluation Questions 4 and 5.

## ACP/Career Readiness Implementation

This section covers Evaluation Question 1 (how has implementation of career readiness changed over time?) and Evaluation Question 2 (what are the varieties of career readiness activities across different school and district contexts?). The findings under these two questions focus on the extent to which ACP is being implemented in the state and on variations of that implementation over time. The specific components related to implementation examined in this section include:

### State and Local Level

- I. High quality district and school ACP implementation
  - a. Equitable participation in career readiness and ACP

### Student Level

1. Student participation in work-based learning and IRCs
2. Student participation in AP/IB and dual enrollment
3. Student engagement in Xello

Notably, the evaluation is unable to examine implementation levels of several components listed in the Introduction at this time including Regular, ongoing, and dedicated time for ACP activities; Family engagement in student ACPs and career readiness; Regular, ongoing, supportive and safe student relationship with adults; Staff buy-in and all-school culture of ACP (because the statewide ACP survey will not be fielded again until the 2022-23 school year); Business and community engagement/WBL participation; Schools offering Regional Career Pathways; CTE concentrator status (due to their recent addition as a metrics of interest); and Student participation in Career Pathways (due to unavailability of data). Stakeholder perceptions about many of these topics are included in the case study findings, however. Student preparedness to enter post-secondary education, on-time high school completion, and student participation in post-secondary education are examined in the outcomes section of this report.

## Equitable Participation in Student ACPs and Career Readiness

DPI defines educational equity as “every student [having] access to the resources and educational rigor they need at the right moment in their education, across race, gender, ethnicity, language, ability, sexual orientation, family background, and/or family income.”<sup>2</sup> However, it is important to distinguish between equity in terms of access (that is, who is theoretically able to participate), equity in actual participation rates, and equity in terms of whether the right opportunities are occurring at the right time for all students. A wide variety of factors can create barriers to participation among students who are theoretically eligible, and even required activities such as those undertaken to satisfy graduation requirements may not be best suited to each student’s individual needs.

Student participation results in the following sections will also highlight the extent of equitable access to career readiness activities by providing breakdowns of participation by student subgroups where available, such as race/ethnicity, economic status, English learner status, and special education status. To examine the extent of equitable access by region, these sections will also examine participation by CESA.

## Student Participation in Work-Based Learning and IRCs

DPI’s Career Education reporting systems provide information on student participation in work-based learning activities and IRCs. The major categories of activities include Youth Apprenticeships, State Skills Standards Co-Ops, non-certified work-based learning programs (NCEs), and IRCs. To provide context into the types of students participating in these activities, the following pages of summary data show the percentages of students participating overall, by grade, race/ethnicity, economically disadvantaged status, special education status, English proficiency status, and CESA.

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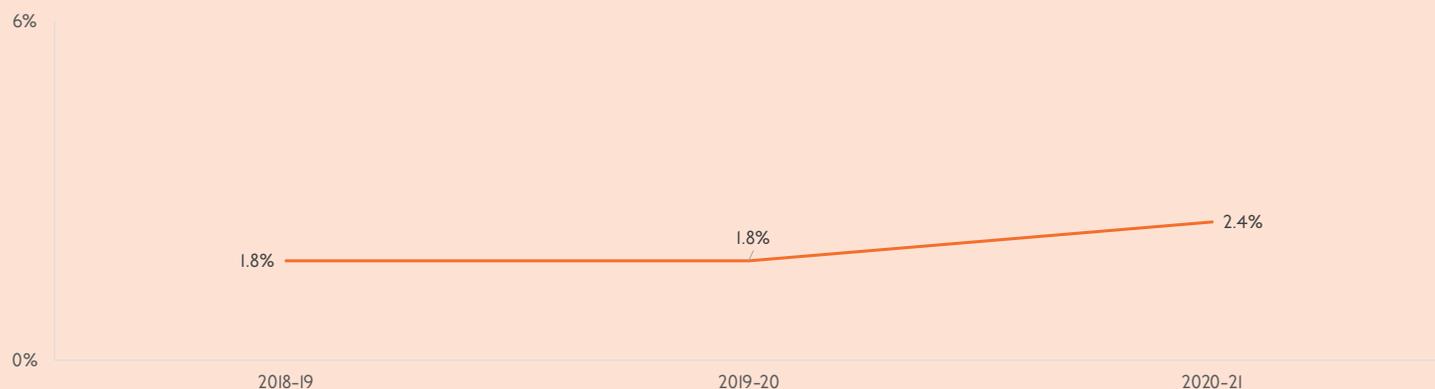
<sup>2</sup> <https://dpi.wi.gov/rte/equity>

# Youth Apprenticeships

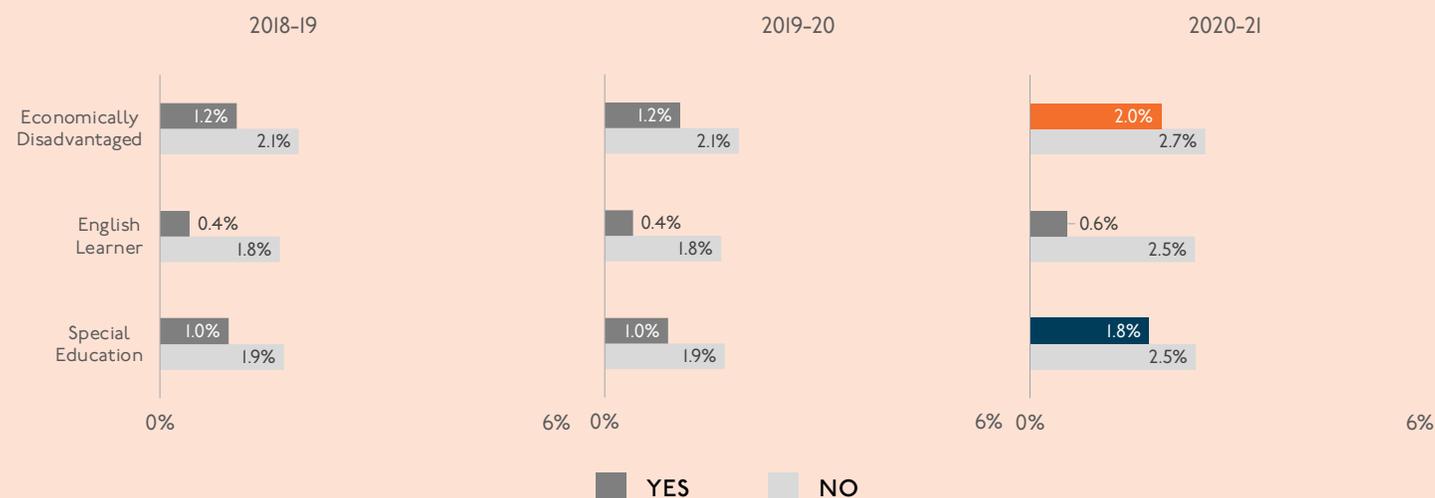
## Participation Percentages for 2018-19, 2019-20, and 2020-21

As seen from the following dashboard, approximately 2.4 percent of students in high school participated in Youth Apprenticeships in 2020-21, an increase over the prior two years. This is a notable increase given that the majority of COVID-related challenges facing schools occurred during 2020-21 (as well at the end of 2019-20). The dashboard shows evidence of gaps in participation based on student population. White students participated in Youth Apprenticeships as a rate over double that of any other race/ethnicity. Economically disadvantaged students, students with disabilities, and English learners all participated at lower rates compared to students not in those categories. Regionally, participation in Youth Apprenticeships was highest in CESAs 3 and 5 with large increases in participation from previous years. Participation was lowest in CESAs 1 and 12. The majority of students participating in Youth Apprenticeships were in 11th and 12th grade.

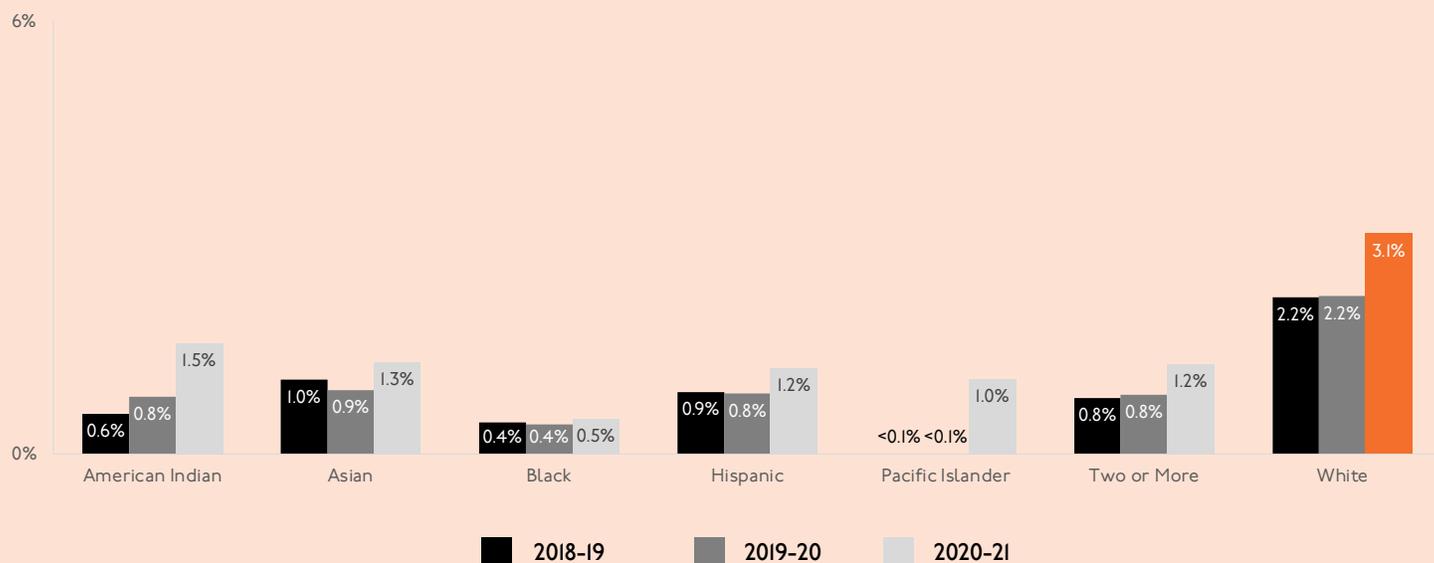
**Figure 1:** Overall participation **increased** in 2020-21.



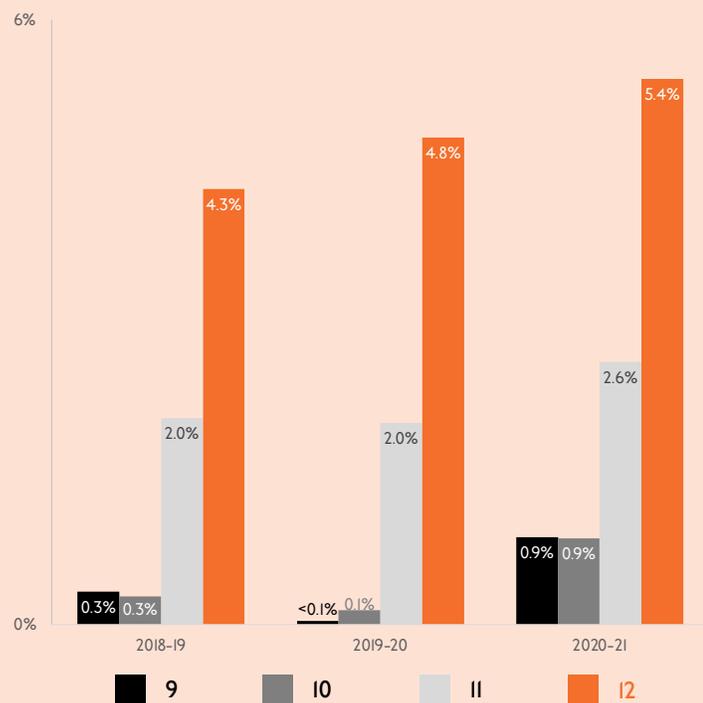
**Figure 2:** **Economically disadvantaged** and **special education** students showed **increased rates of participation** in 2020-21.



**Figure 3:** Participation of **White** students remained at a rate over **double** that of any other race/ethnicity.



**Figure 4:** Participation was **highest in 12th grade**, but all grades showed increased participation in 2020-21.



**Table I:** Participation **increased** in **CESA 3** and **CESA 5**.

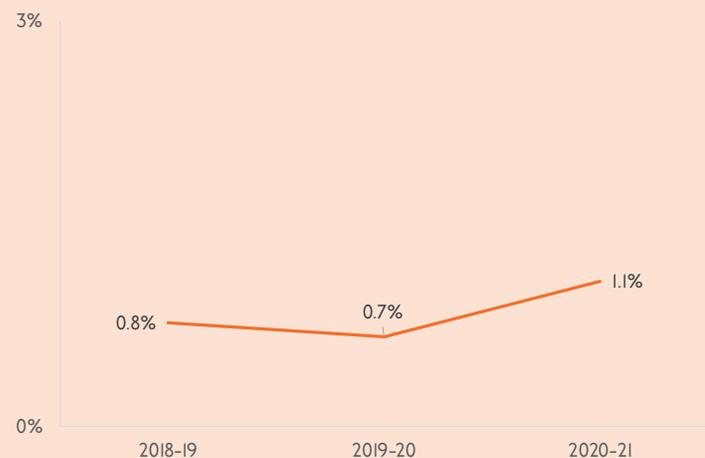
CESA	2018-19	2019-20	2020-21
1	0.7%	0.9%	1.0%
2	2.7%	1.4%	1.7%
3	3.5%	6.4%	<b>9.6%</b>
4	0.9%	1.0%	1.5%
5	2.2%	2.8%	<b>11.6%</b>
6	1.4%	2.0%	1.9%
7	1.4%	1.7%	2.0%
8	0.7%	0.8%	1.6%
9	3.5%	3.8%	2.0%
10	3.5%	2.1%	2.7%
11	3.5%	3.3%	3.0%
12	0.2%	1.0%	1.2%

# State Skills Standards Co-ops

## Participation Percentages for 2018-19, 2019-20, and 2020-21

The following dashboard shows participation rates in State Skills Standards Co-Ops overall and by the three major types. As seen, slightly more than one percent of high school students participated in State Skills Standards Co-Ops, and the majority of these Co-Ops were Employability Skills and Occupational. The dashboard also shows participation by grade level, student subgroups, and region. Compared to Youth Apprenticeships, there was less of a gap in participation in State Skills Standards Co-Ops across subgroups, with the exception of English learner students in 2020-21. There was a slight increase in participation in 2020-21 compared to previous years overall and across subgroups. Participation in State Skills Standards Co-Ops was highest in CESA 5 and lowest in CESA 7. CESA 5 experienced a large increase in participation in 2020-21. The highest student participation occurred in 11th and 12th grade.

**Figure 5:** Overall participation **increased** slightly in 2020-21.



**Figure 6:** Most of the participation increase was in **Occupational Co-Ops**.



**Figure 7:** Participation rates for **Economically Disadvantaged** and **Special Education** students **increased to similar levels** as non-Economically Disadvantaged and non-Special Education students in 2020-21.

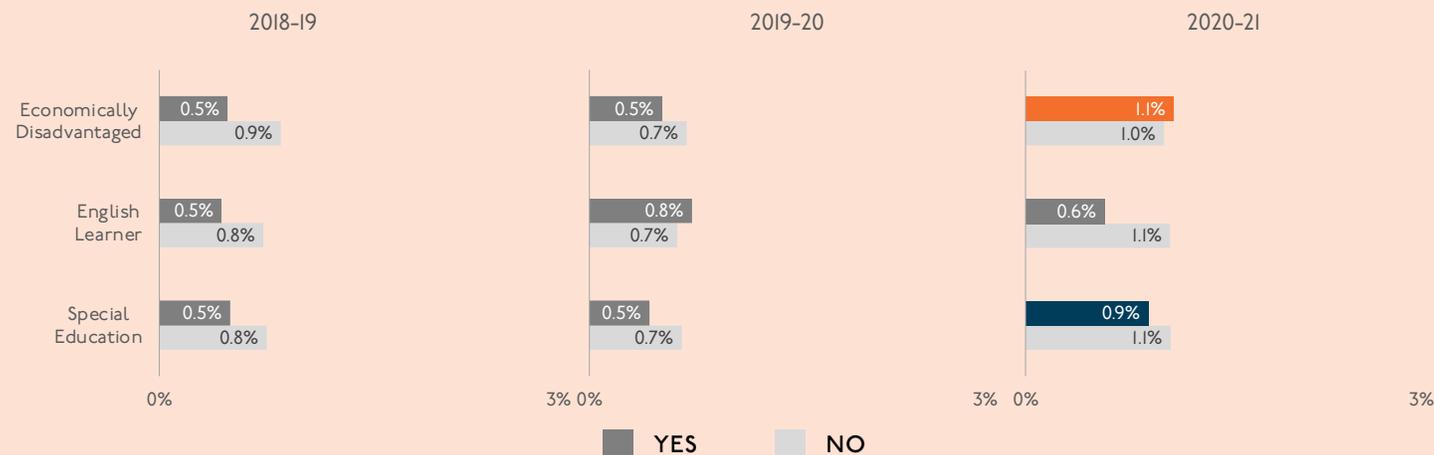


Figure 8: Participation in 2020-21 increased most for American Indian, Asian, and White students.

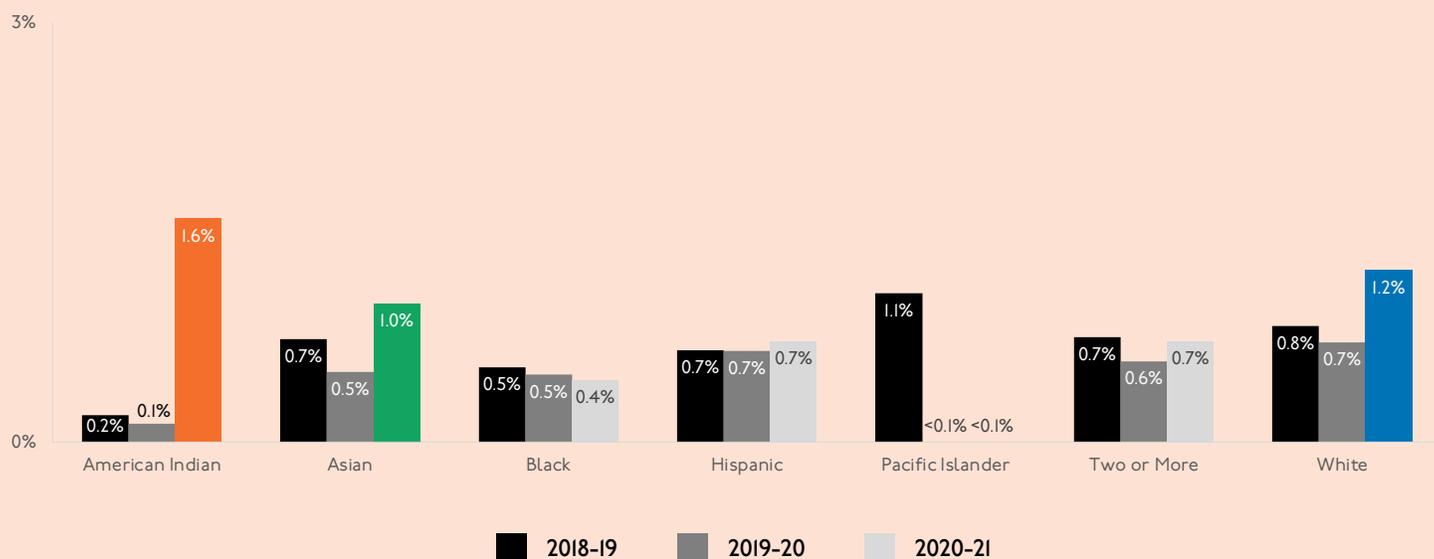


Figure 9: Participation was highest in 12th grade, but all grades increased participation in 2020-21.

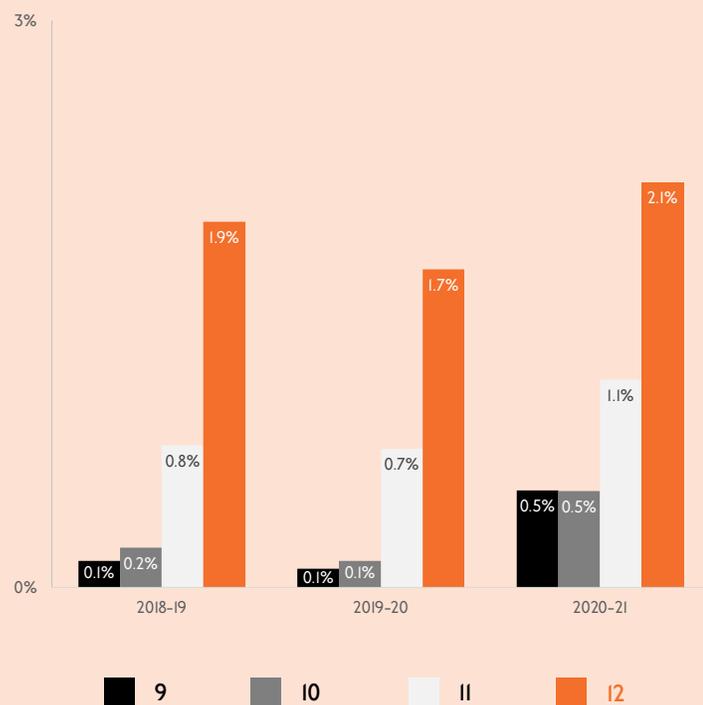


Table 2: CESA 5 saw a substantial increase in participation in 2020-21.

CESA	2018-19	2019-20	2020-21
1	0.2%	0.3%	0.4%
2	1.6%	1.2%	0.8%
3	0.6%	0.8%	0.6%
4	0.1%	1.1%	1.1%
5	1.1%	0.9%	8.9%
6	0.5%	0.3%	0.4%
7	0.2%	0.3%	0.2%
8	0.3%	0.2%	0.3%
9	3.5%	1.9%	1.6%
10	0.4%	0.3%	0.4%
11	1.6%	1.1%	0.8%
12	<0.1%	0.2%	0.3%

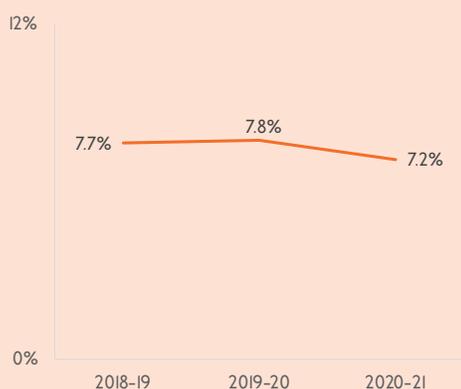
# Non-Certified Career Education Programs

## Participation Percentages for 2018-19, 2019-20, and 2020-21

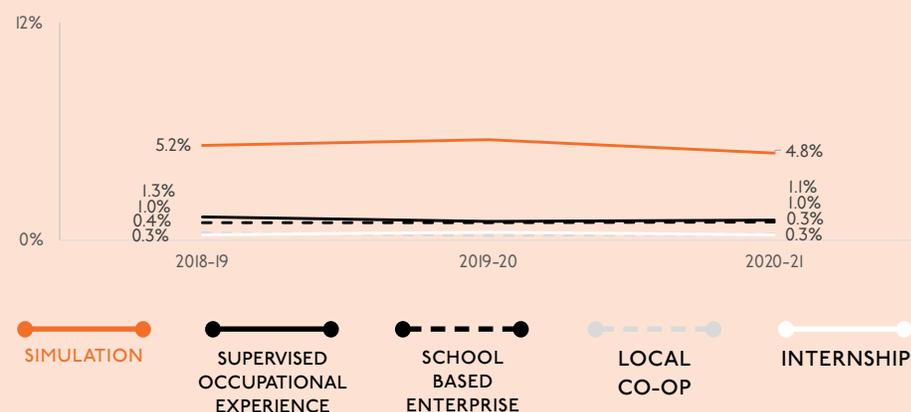
DPI administrative data also included information on participation in non-certified work-based learning. The following dashboard shows the overall participation rate of high school students in these non-certified programs as well as by the five types: internships, local co-ops, school-based enterprises, simulations, and supervised occupational experiences. Over the last three years of available data, the overall participation rate was just less than eight percent of high school students, with the majority of participation coming from simulations. There was a slight drop in participation rates in 2020-21 compared to previous years.

Across student subgroups, participation was higher for Asian and White students and participation was lower for Black, Pacific Islander, economically disadvantaged, and English learner students. Unlike many aspects of college and career readiness, special education and non-special education students had similar rates of participation in non-certified work-based learning. As seen from the regional participation rates, participation was highest in CESAs 3, 5, 6, and 9.

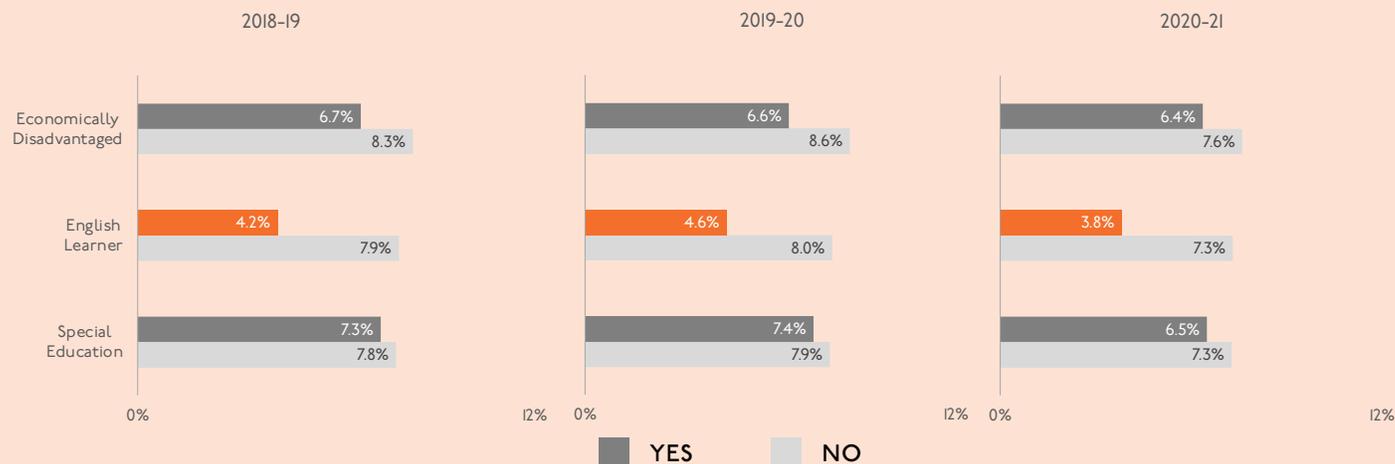
**Figure 10:** Overall participation remained somewhat **stable** from 2018-19 to 2020-21.



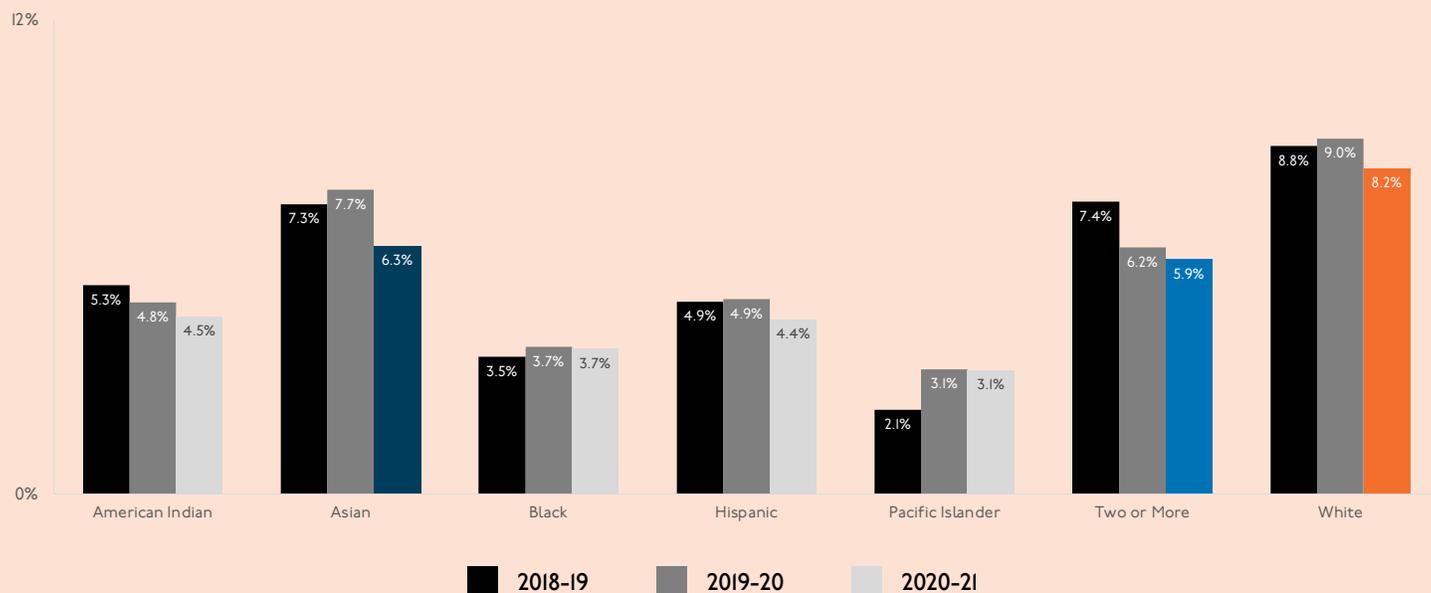
**Figure 11:** Participation was highest in **Simulations**.



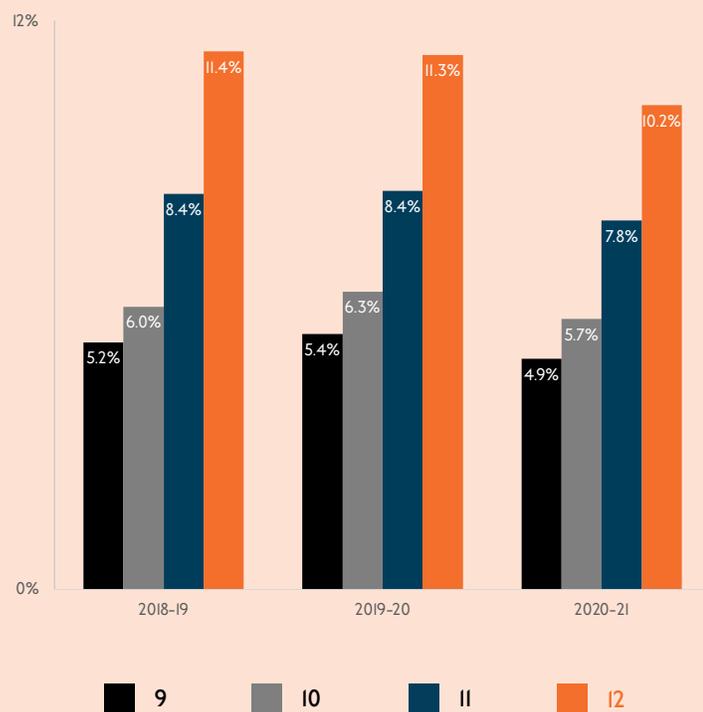
**Figure 12:** Participation continued to be **lowest for English learner students**.



**Figure 13:** Participation across race/ethnicity showed **White** and **Asian** students participate at the highest rates.



**Figure 14:** Participation was **higher** in **11th** and **12th** grade.



**Table 3:** Participation remained highest in **CESAs 3, 5, 6, and 9.**

CESA	2018-19	2019-20	2020-21
1	5.1%	5.6%	5.2%
2	2.5%	3.0%	3.7%
3	<b>18.9%</b>	<b>20.4%</b>	<b>16.4%</b>
4	5.9%	9.9%	3.2%
5	<b>21.3%</b>	<b>18.7%</b>	<b>19.0%</b>
6	<b>14.0%</b>	<b>15.2%</b>	<b>12.2%</b>
7	4.6%	3.5%	2.3%
8	6.4%	6.6%	8.0%
9	<b>19.1%</b>	<b>16.1%</b>	<b>16.7%</b>
10	9.6%	8.7%	9.6%
11	5.2%	4.0%	3.6%
12	6.2%	6.6%	9.2%

# Industry Recognized Credentials

## Participation Percentages for 2018-19, 2019-20, and 2020-21

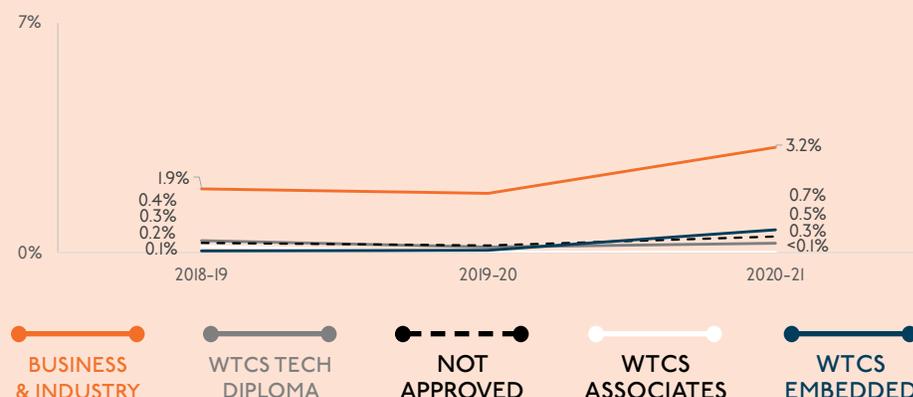
The following dashboard shows the percentage of high school students participating in IRCs overall and by each of the five types. Overall participation in IRCs in 2020-21 was at slightly less than four percent of high school students, which increased by just under two percentage points from 2019-20. The majority of participation in IRCs was in State-Approved Business and Industry.

As with the previous types of student participation, this report also provides information on IRC participation by subgroups of students. Similar to other work-based learning, participation in IRCs increased throughout high school. Across racial and ethnic groups, Black students participated in IRCs at the lowest rates. There were also gaps in participation based on economic status and special education status. While there was only a slight difference in participation between students based on English proficiency status in 2018-19, this difference increased in 2019-20 and 2020-21. More generally, from 2019-20 to 2020-21, participation in IRCs increased across all subgroups. Regionally, participation in IRCs varied by school year. In 2020-21, CESA 5 had the highest participation, with a large increase from prior years, and CESAs 4 and 9 had the lowest.

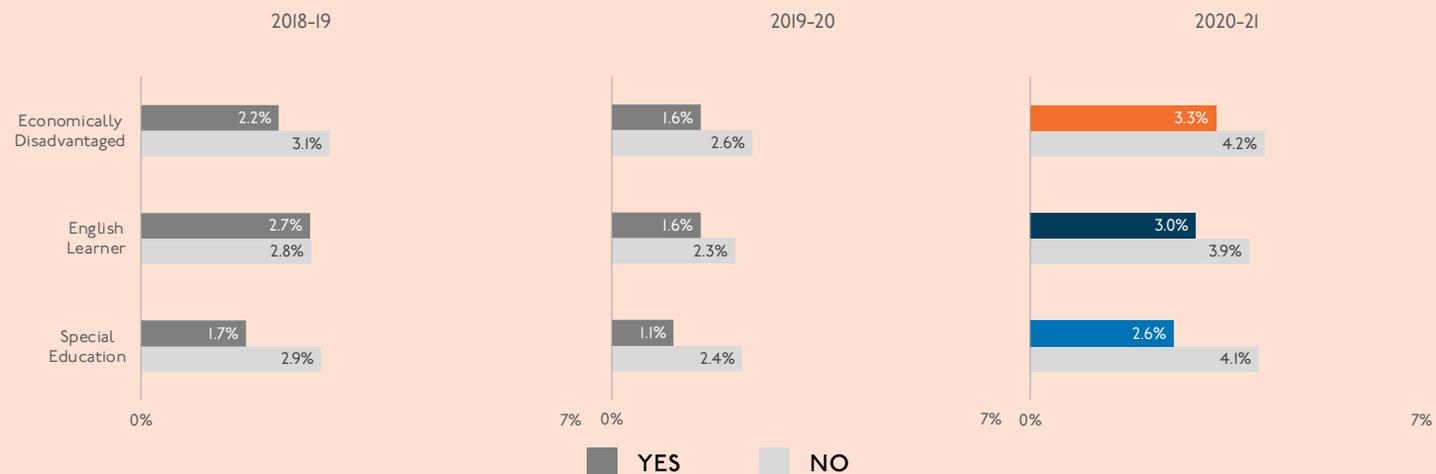
**Figure 15:** Overall participation **increased** in 2020-21.



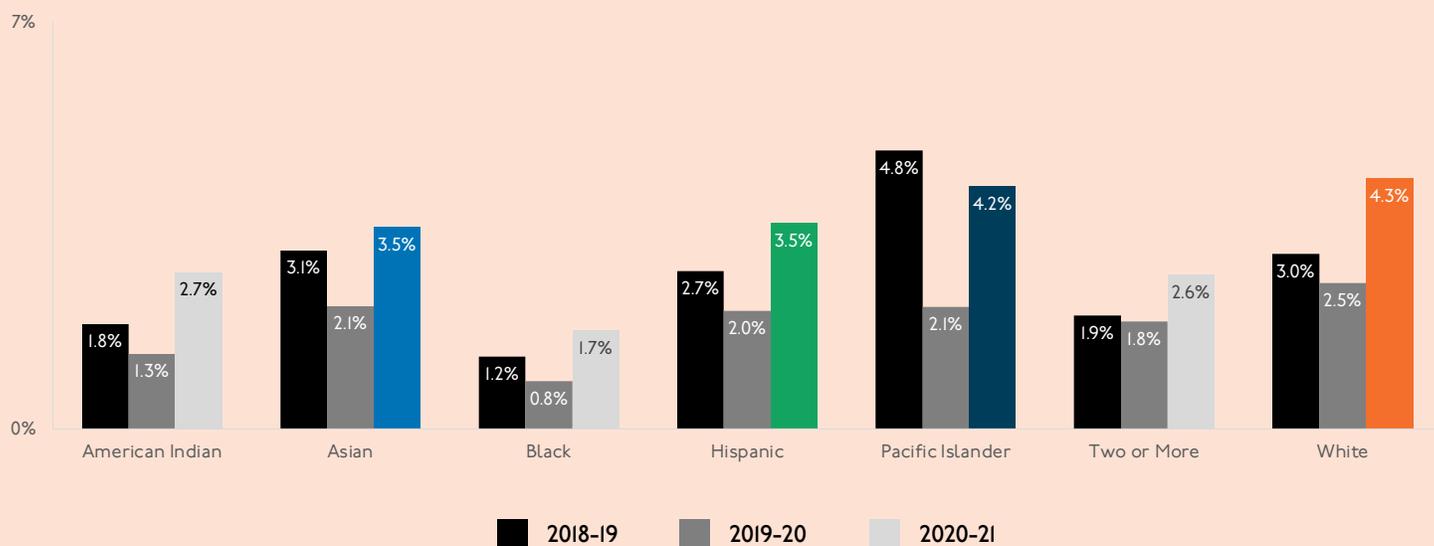
**Figure 16:** Participation mostly **increased** for WTCS Embedded Technical Diplomas and State Approved Business and Industry.



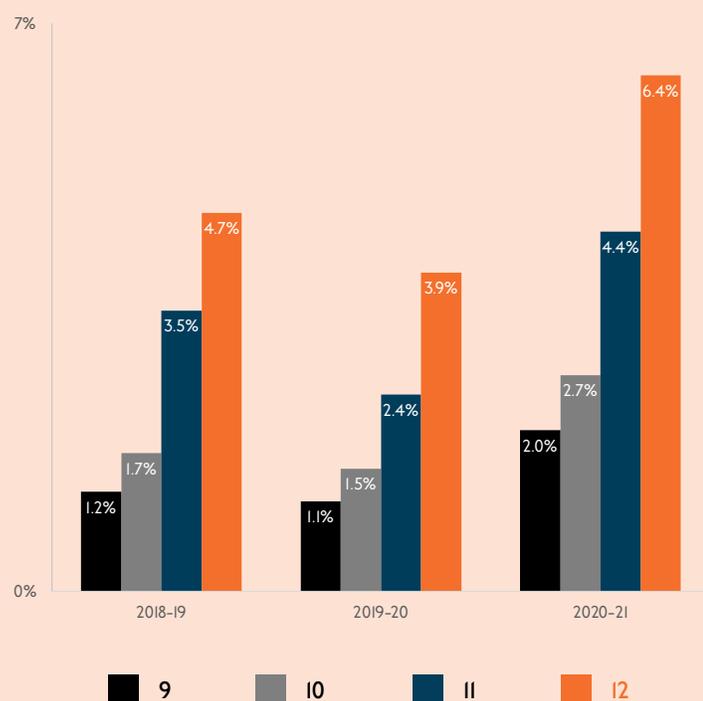
**Figure 17:** Participation increased for **Economically Disadvantaged**, **English learner**, and **Special Education** students.



**Figure 18:** All race/ethnicity groups saw an **increase** in participation in 2020-21 with **White**, **Pacific Islander**, **Asian**, and **Hispanic** students participating at the **highest** rates.



**Figure 19:** Participation **increased** across all grade levels with participation remaining **higher** in **11th** and **12th** grade.



**Table 4:** Participation rates more than doubled in **CESAs 5, 7, 8, and 10.**

CESA	2018-19	2019-20	2020-21
1	2.5%	1.9%	3.3%
2	3.3%	3.2%	3.3%
3	2.4%	4.1%	2.0%
4	1.2%	1.0%	1.0%
5	1.4%	0.7%	<b>11.3%</b>
6	2.2%	2.3%	3.6%
7	5.2%	2.9%	<b>6.0%</b>
8	1.1%	0.7%	<b>2.2%</b>
9	1.4%	1.9%	1.3%
10	7.0%	2.0%	<b>5.3%</b>
11	1.5%	2.4%	2.6%
12	0.3%	2.1%	2.6%

## Student Participation in AP/IB and Dual Enrollment

Student-level data on AP and IB course participation comes from DPI's Coursework Completion System (CWCS) which covered 2014-15 and 2015-16, and Roster, which covered 2016-17 through 2020-21. Due to the change in data systems over the period of examination, the evaluation only included schools that reported data on AP and IB over all years. Figure 20 shows the statewide participation rate in AP/IB courses among students in Grades II-12. The participation rate from 2014-15 through 2020-21 ranged from approximately 34 percent to 38 percent. While there was a slight decrease in participation from 2015-16 to 2016-17 (which may be due to changing data systems), there was a slight increase in participation from 2016-17 through the second year of ACP implementation in 2018-19 followed by a slight decrease through 2020-21.

The evaluation also examined equitable participation in AP/IB course enrollment across student subgroups. Figure 21 - Figure 24 show the participation rate by race/ethnicity, economic status, special education status, and English learner status, respectively. As seen from these figures, American Indian, Black, economically disadvantaged, special education, and English learner students all had participation rates lower than their subgroups of comparison. English learners had gains in participation in 2020-21, closing the gap with non-English learners somewhat. Regional participation in AP/IB courses also varied, as seen in Table 5. During the most recent year of implementation data in 2020-21, CESA I continued to have the highest participation rate while CESAs 8 and 10 had the lowest.

**Figure 20: Participation in AP/IB Overall**

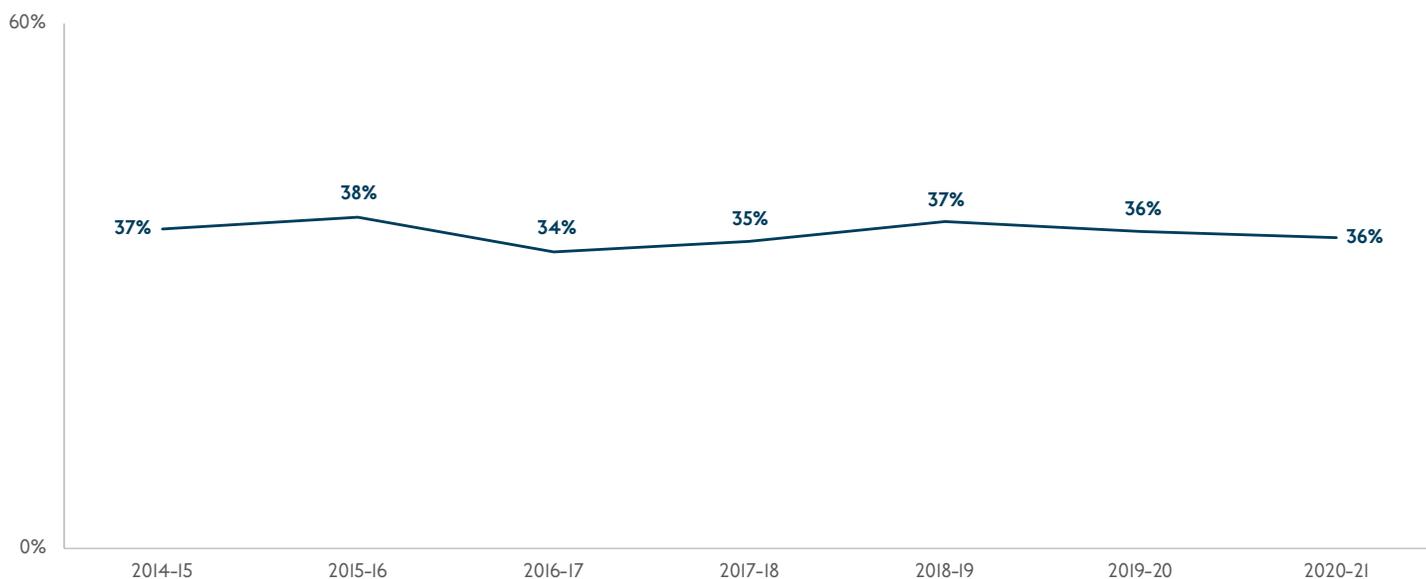


Figure 21: Participation in AP/IB by Race/Ethnicity

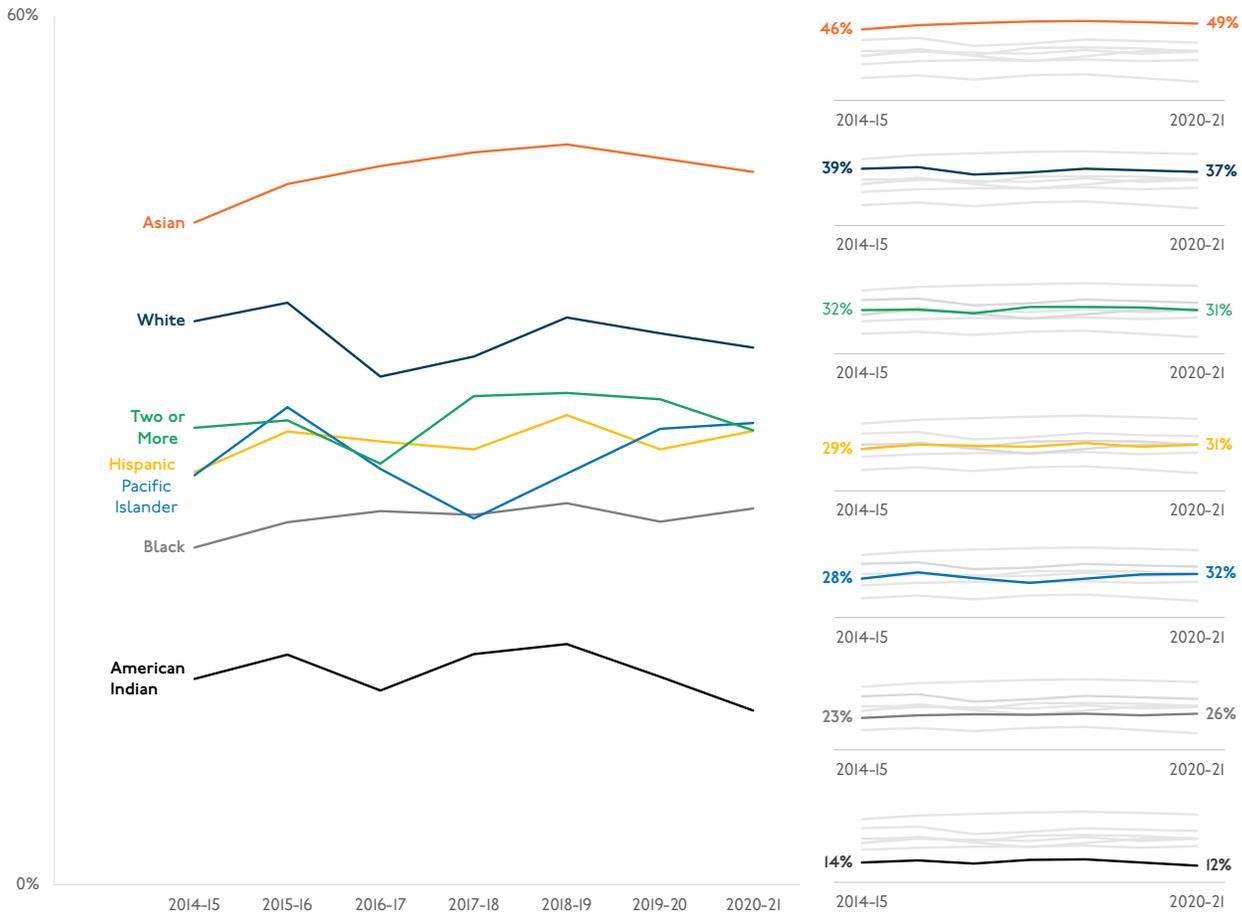


Figure 22: Participation in AP/IB by Economic Status

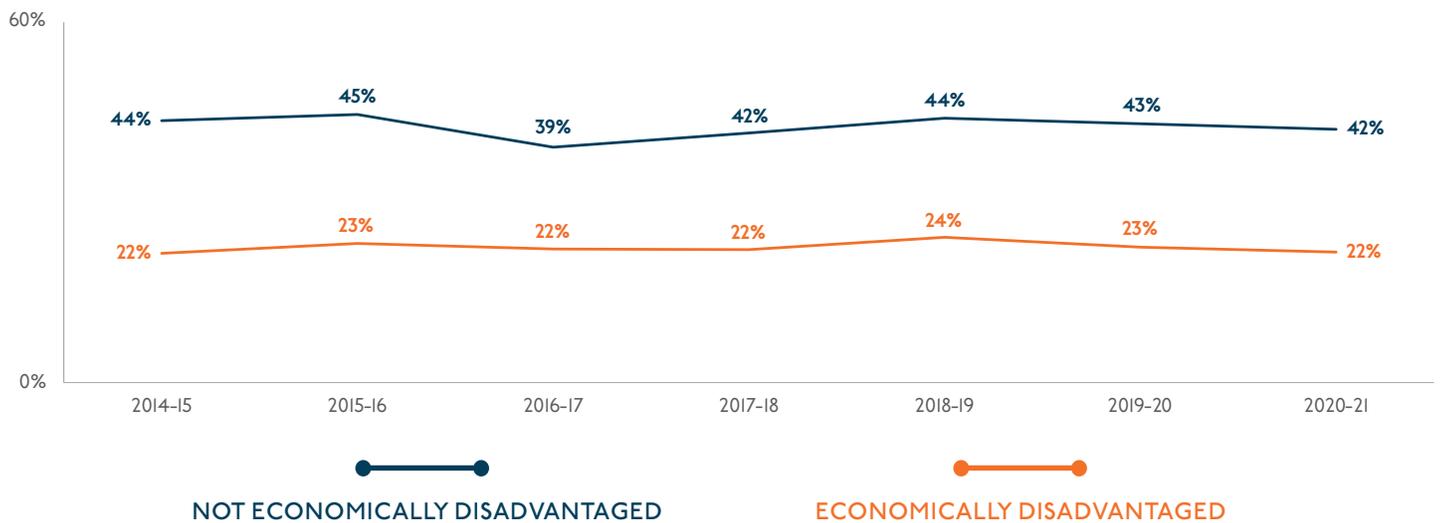


Figure 23: Participation in AP/IB by Special Education Status

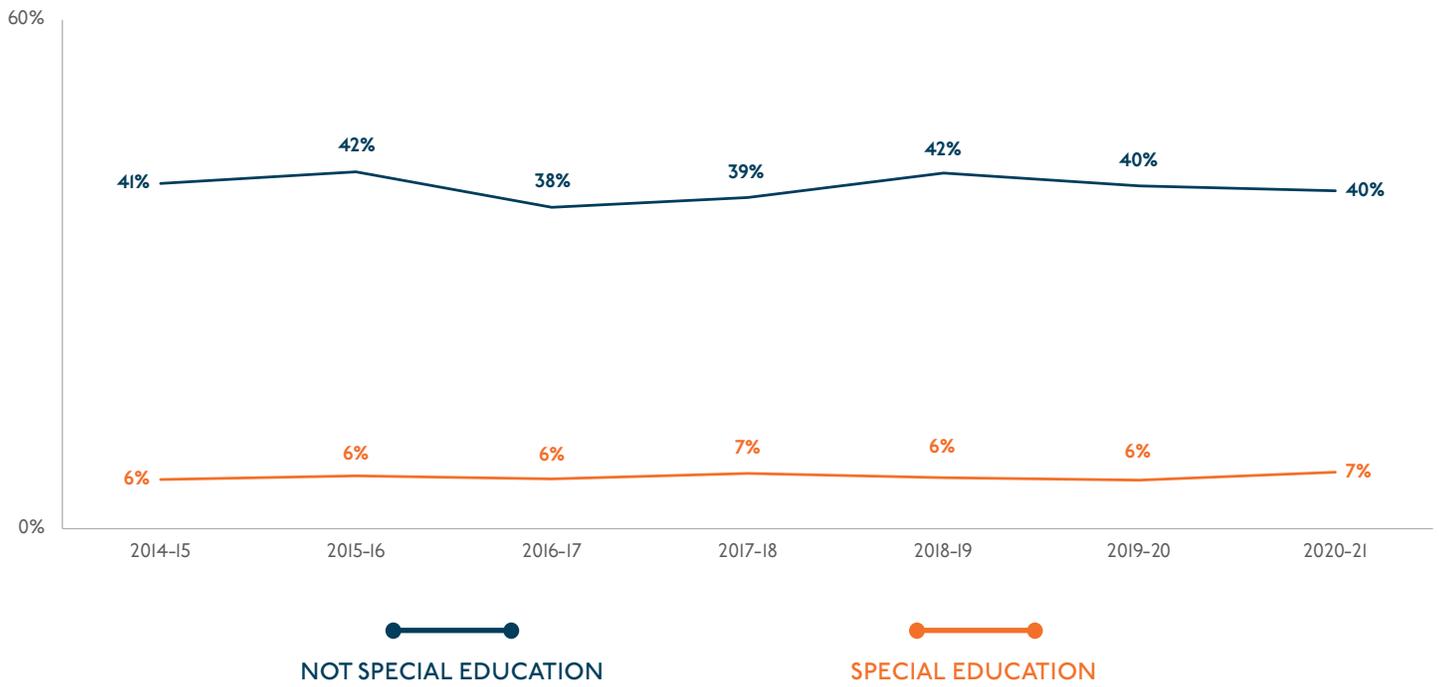


Figure 24: Participation in AP/IB by English Learner Status

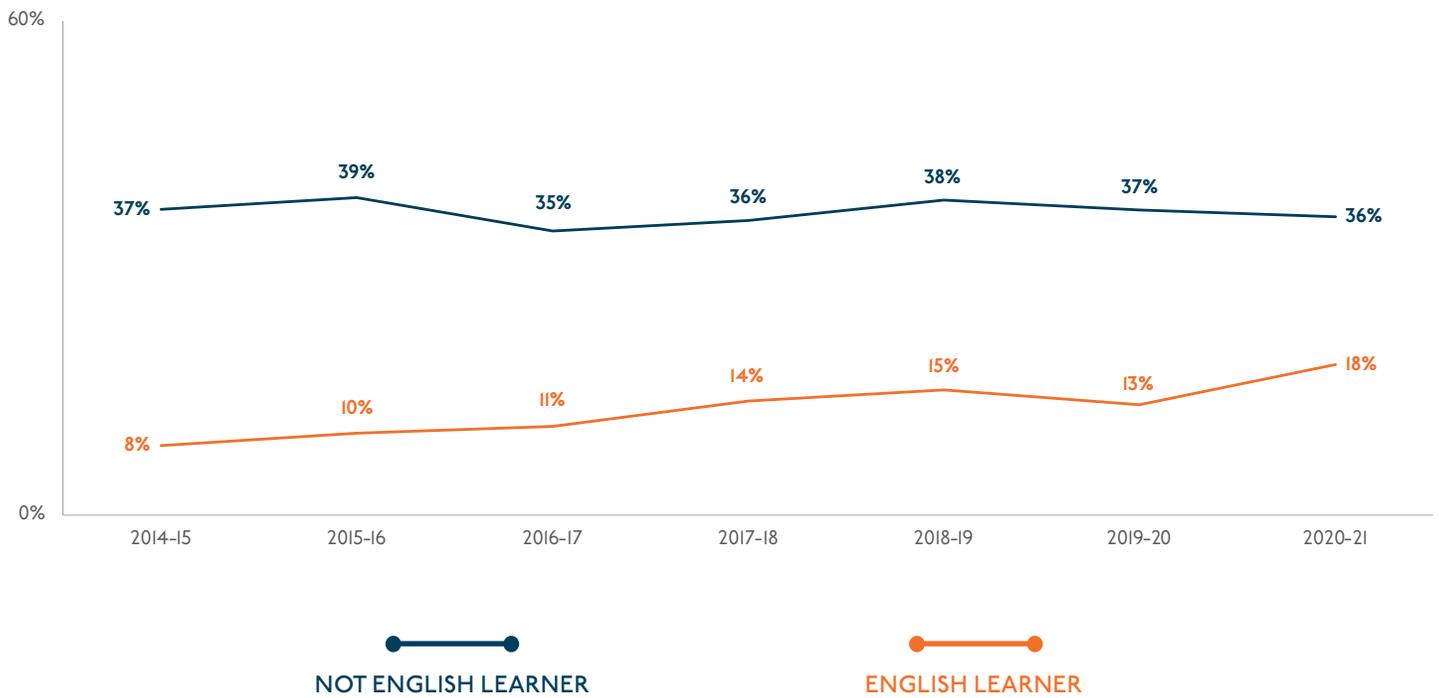


Table 5: Participation in AP/IB by CESA

CESA	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
1	44.5%	46.2%	43.7%	44.9%	46.4%	47.0%	47.3%
2	37.6%	40.1%	37.8%	38.2%	42.1%	39.7%	40.0%
3	28.0%	31.4%	23.1%	23.9%	30.6%	28.9%	33.5%
4	27.4%	26.7%	19.0%	26.5%	28.6%	23.3%	25.4%
5	31.6%	32.1%	21.4%	19.1%	25.9%	31.2%	28.4%
6	38.0%	37.9%	30.8%	33.3%	33.1%	30.1%	30.7%
7	31.3%	32.2%	30.8%	31.7%	34.4%	33.5%	34.1%
8	17.0%	15.9%	12.0%	10.0%	12.2%	11.5%	11.3%
9	31.9%	32.5%	28.6%	31.5%	35.0%	34.1%	32.2%
10	28.7%	30.8%	31.7%	29.6%	30.2%	28.0%	11.2%
11	32.2%	34.2%	25.9%	26.4%	26.0%	24.3%	20.8%
12	20.2%	18.8%	8.0%	18.9%	24.6%	18.5%	23.0%

DPI provides information on student participation in dual enrollment in two ways: first, the type of institution at which the student potentially earns post-secondary credits – private college, technical college, tribal college, or UW System – and second, whether the course was taught at the high school or college. The dashboard on the next page shows the percentage of high school students participating in dual enrollment courses overall as well as by the type of instruction and the location of the course. Over 20 percent of all high school students participated in some type of dual enrollment course in 2020-21, with a slight increase in participation from 2018-19. The vast majority of these dual enrollment courses provided credits with technical colleges and occurred in students' high schools.

Dual enrollment participation by various subgroups is also shown on the dashboard. Participation gradually increases throughout high school, with approximately 10 percent of students participating in dual enrollment in 9th grade and over 30 percent in 12th grade. Asian and White students participated at the highest rates while American Indian and Black students participated at lower rates. Economically disadvantaged students, students with disabilities, and English learners also participated at lower rates compared to students not in those groups. Gaps also appeared to increase in 2020-21. While participation increased overall, American Indian and Black students experienced a decrease in participation rates, and economically disadvantaged, special education, and English learner students also experienced slight decreases in participation. Examining regional variation, dual enrollment participation was highest in CESAs 6 and 7 and lowest in CESAs 5 and 12.

# Dual Enrollment

## Participation Percentages for 2018-19, 2019-20, and 2020-21

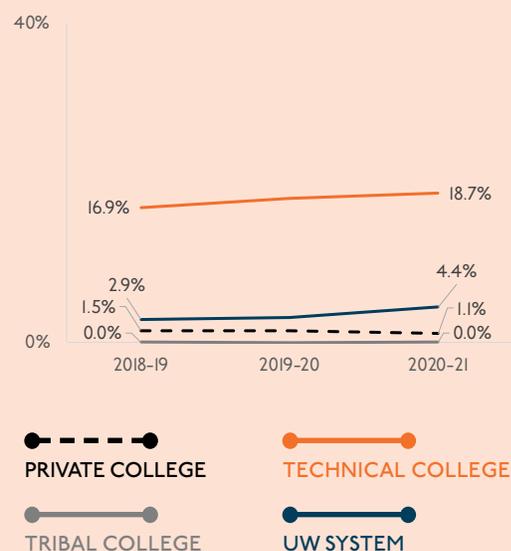
**Figure 25:** Overall participation continued to **increase** in 2020-21.



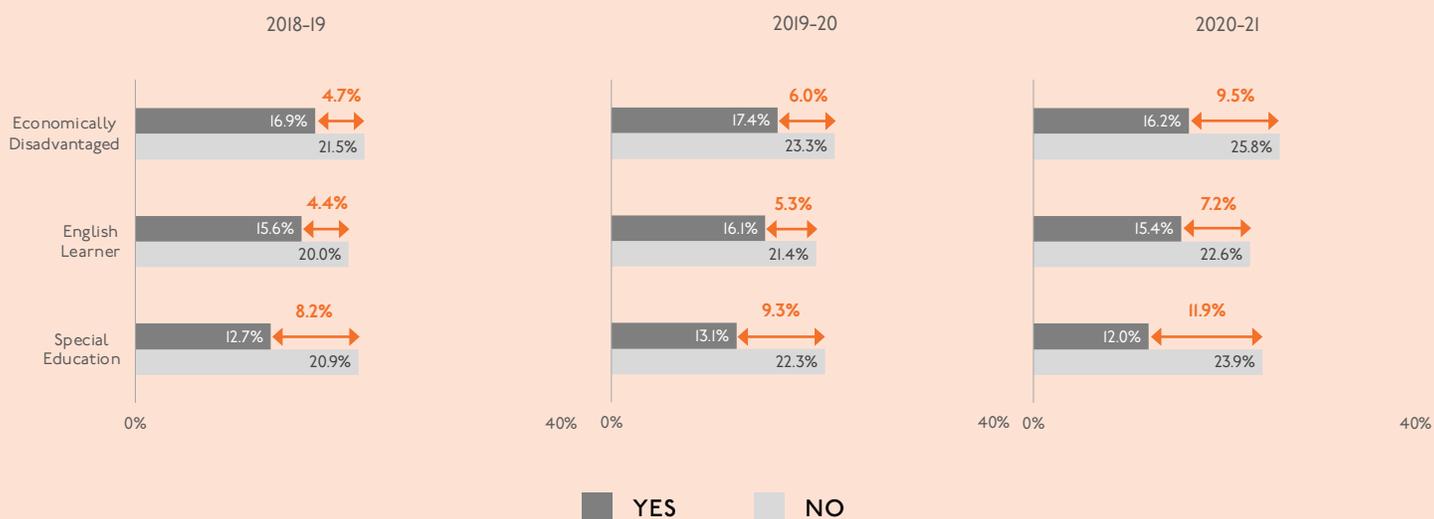
**Figure 26:** The **majority** of dual enrollment courses continued to take place in **high school**.



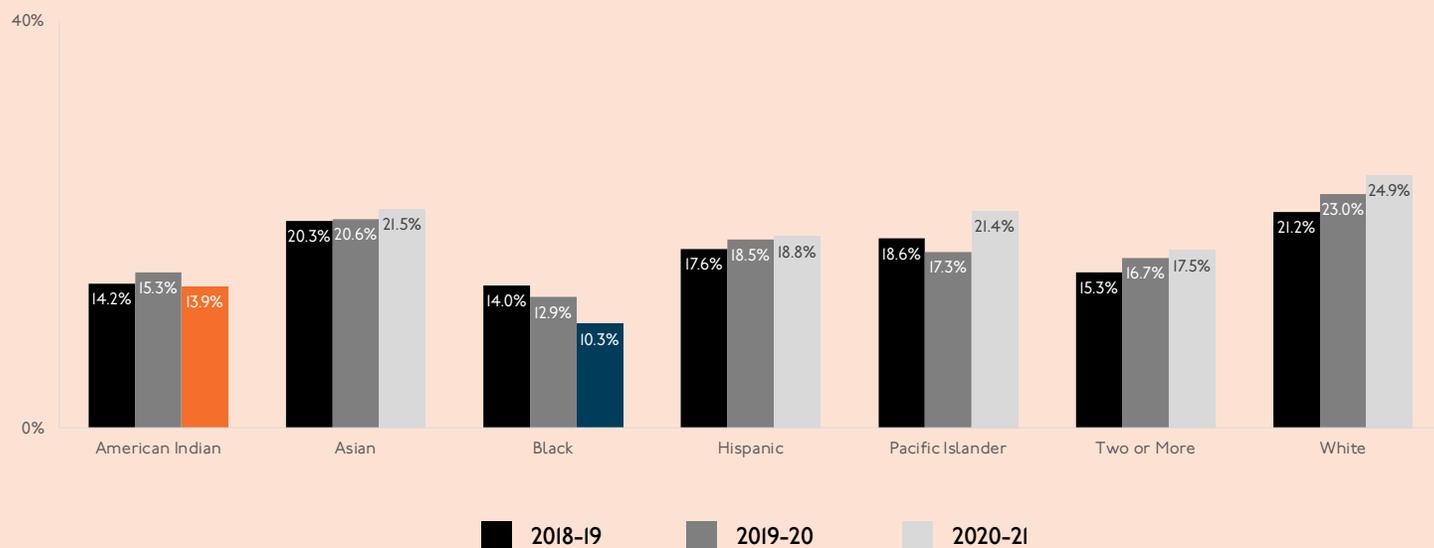
**Figure 27:** Most dual enrollment courses provide credits from **technical colleges**, though there was also an **increase** for the **UW System**.



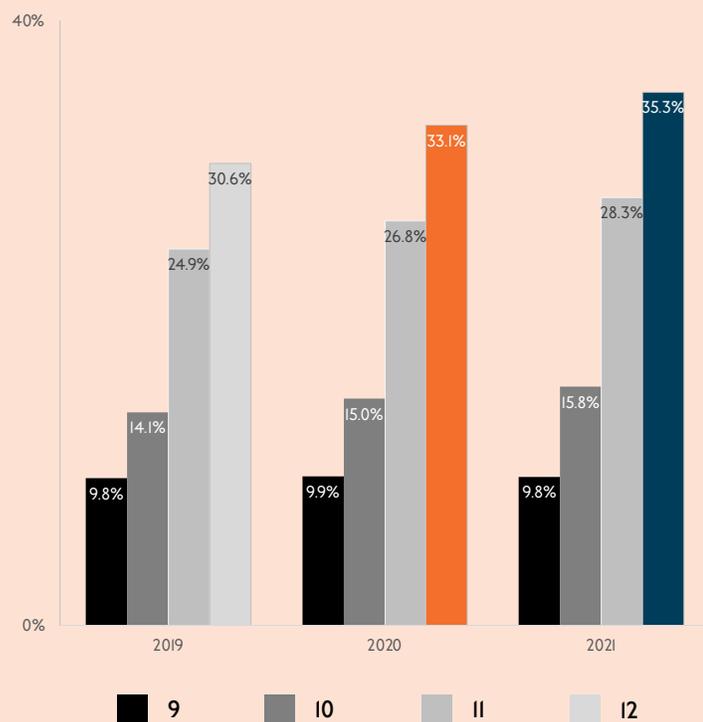
**Figure 28:** Participation gaps **widened** for Economically Disadvantaged, Special Education, and English learner students.



**Figure 29:** Participation **increased** across most race/ethnicity groups with the **exception** of **American Indian** and **Black** students.



**Figure 30:** Participation was **highest** in **11th** and **12th** grade.



**Table 6:** Participation was **highest** in **CESAs 6** and **7**.

CESA	2018-19	2019-20	2020-21
1	15.2%	15.6%	17.4%
2	17.8%	20.0%	18.6%
3	19.5%	19.0%	17.4%
4	19.0%	21.5%	29.4%
5	15.3%	16.8%	15.3%
6	30.1%	33.1%	<b>34.9%</b>
7	25.9%	28.0%	<b>32.2%</b>
8	11.2%	13.6%	22.6%
9	20.8%	23.4%	22.0%
10	30.4%	30.3%	22.9%
11	21.5%	18.9%	22.0%
12	11.9%	14.0%	16.8%

Table 7: Xello User Activity Completion

GRADE	LESSON	2019-20	2020-21
6	Interests	16.6%	5.2%
	School Subjects at Work	18.2%	5.1%
	Decision Making	12.5%	3.7%
	Time Management	9.4%	3.6%
7	Explore Learning Styles	17.8%	4.0%
	Discover Learning Pathways	15.3%	4.0%
	Biases and Career Choices	13.0%	3.3%
	Jobs and Employers	8.2%	2.3%
8	Skills	21.3%	4.8%
	Explore Career Matches	16.7%	4.6%
	Transition to High School	15.4%	4.0%
	Self-Advocacy	10.1%	2.8%
9	Personality Styles	18.0%	4.9%
	Exploring Career Factors	15.6%	3.3%
	Getting Experience	8.3%	2.4%
	Study Skills and Habits	11.0%	4.8%
10	Work Values	15.8%	3.7%
	Careers and Lifestyle Costs	14.4%	3.4%
	Workplace Skills and Attitudes	11.8%	3.6%
	Program Prospects	7.0%	2.6%
11	Choosing a College or University	11.7%	3.0%
	Career Demand	10.7%	2.8%
	Entrepreneurial Skills	7.5%	2.2%
	Work/Life Balance	6.7%	2.2%
12	Defining Success	5.5%	2.2%
	Career Backup Plans	6.2%	2.6%
	Job Interviews	6.0%	2.5%
	Career Path Choices	3.3%	1.9%

## Student Engagement in Xello

A new metric for career readiness identified from the recent logic model revision is student engagement in Xello. The major source of data related to this career readiness component is Xello lesson completion. At each grade level, DPI provides a recommended set of Xello lessons for students to complete.<sup>3</sup> Data provided by Xello show the extent that students completed these lessons at each grade level for students using the software. As noted in the methodology section, limitations associated with Xello records did not allow for linking of these records to other DPI records. As a result, student completion is only measured for schools with any Xello records and not for all ACP schools statewide. Table 7 shows the recommended Xello lessons at each grade level and the percentage of Xello users that completed each activity in 2019-20 and 2020-21. For reference, Xello users make up anywhere from 91 to 99 percent of the enrolled students in each grade level. As seen from this table, Xello lesson completion was generally highest in the middle school grades in 2020-21, especially for the Interests, School Subjects at Work, and Skills lessons. While lesson completion remained near middle school levels in 9th grade, it dropped to lower levels of completion by 12th grade. There was a large decrease in activity completion between 2019-20 and 2020-21, likely due to schools facing COVID-related challenges.

<sup>3</sup> <https://xello.mcoutput.com/270450/Wisconsin%20ACP%20and%20Xello.pdf>

## Stakeholder Perceptions: Case Studies

This section of the findings examines Evaluation Question #3 (what are stakeholder perceptions about career readiness?) with evidence from case studies conducted in two large, multi-high school districts. As noted, the case studies reported herein focus on questions of equitable access and participation in ACP and career readiness activities – particularly optional, high-leverage activities such as dual enrollment, work-based learning, and AP courses – the barriers to equitable access and participation, and ideas for eliminating barriers and other reasons for inequities.

### District A

In District A, evaluators identified themes from both the district- and school-level interviews. Many of the district-level findings aligned to school-level findings, so those are listed together where they connect. WEC also included specific recommendations with several of the school-level findings, most of which should be relevant to a wider audience of districts across the state.

#### Participation gaps

- At the district level, there was an awareness among central office staff about the gaps that exist and a desire to know more about the “whys” and root causes. Participation gaps may result from traditional gender roles, language (students who do not speak either English or Spanish), and students and families “not seeing themselves” in certain activities, courses, or post-secondary institutions.
  - School-level interviewees discussed challenges with communicating to students about career readiness. Interviewees mentioned difficulty attracting certain traditionally underserved populations and students who are not motivated in their core courses (“don’t do school”).
  - A recommendation to the district was that communication be a focus of any youth-centered data collection.
- For instance, a success at one school was re-branding “co-op” to “internship” because students are more familiar with internships.

#### Coursework and coursework limitations

- District-level staff noted that higher-level courses may be too rigid in terms of accommodation/differentiation, and that students may be restricted from high-impact opportunities because they require remediation in core courses. School-level interviewees also noted that remediation requirements may hamper student access to higher-level courses or other career readiness activities.
- It may be efficient to incorporate career readiness activities into already-existing courses and conferences to help both staff and youth make connections between these activities and career readiness, thus fostering buy-in.

#### School-specific implementation and programming

- The extent of ACP implementation and integration was highly dependent on the individual school. ACP appeared much more integrated within curriculum and courses at one high school than at the other.
- District-level interviewees noted that activities across buildings can be inconsistent. Geography can act as a barrier if students are interested in activities or pathways their buildings do not offer.
  - We probed this finding further at the school level, but school staff did not see this as a barrier to the same extent.
- While dialogue between schools may take place to some degree, WEC recommended that the district seek to connect staff at its schools more intentionally so that they can share practices, successes, and challenges.
  - This recommendation may prove relevant to other large and medium-sized districts with varying levels of implementation by school.

### Post-secondary institutions and outcomes

- At the district level, interviewees discussed the district’s connections with local post-secondary institutions.
- School-level interviewees expressed interest in further investigating ACP’s relationship to post-secondary outcomes, such as percentages of students who persisted past the first year or graduated from technical or 4-year colleges, as well as any remedial courses they may have had to take. The district potentially could leverage its partnerships to collect such data.

### Family and community engagement

- District-level interviewees stated that it is necessary to involve the broader school community, including families, in career readiness, and communicate the connections across the traditional curriculum, career readiness activities, and the “real world” rather than just providing a list of activities.
- School-level participants had mixed impressions regarding family engagement. Virtual conferences made it easier to involve families, but many families still preferred to do conferences in-person or via phone.

Other findings and recommendations across district- and school-level interviews and focus groups included the following:

- District-level:
  - Interviewees mentioned the existence and importance of other district and regional initiatives related to ACP and career readiness.
- School level:
  - Given teacher retention challenges, especially in career and technical education subjects, infusing ACP schoolwide takes on added importance; it should not just be in the hands of a few teachers or staff. WEC’s evaluation has revealed this to be a “best practice” in previous years and in other settings across the state.

- Interviewees recommended improved vertical integration with middle school practices and requirements so that students can enter 9th grade with prior knowledge of ACP.
- The COVID-19 pandemic hamstrung career readiness efforts in several ways. Interviewees at the two schools brought up concerns about student mental health and the difficulty of building one-to-one relationships without face-to-face contact. Field trips and career and technical student organizations were less popular as virtual options than as in-person activities.

## District B

In District B, a number of key themes emerged from interviews with district and building leaders, as well as community partners. Many of these themes have been documented in past evaluation years, including:

- The importance of an ACP schoolwide culture
- The importance of mandatory, schoolwide ACP and career readiness activities (“opt out, not opt in”)
- The importance of middle school (and earlier) ACP-related programming to prepare for full and immediate participation in high school (“more and earlier”)
- The key role of counselors in successful programs, but also the barrier of their large caseloads

Additional themes to emerge from interviews with building leaders included:

- The importance of school administrator and central office buy-in, vision, and support
- The need for middle school ACP to be articulated to high school ACP programming
- The need for a grade or other means of accountability for e-portfolios or other documentation of career readiness work
- The need for authentic, two-way engagement with families and community around career readiness
- The need for increased/improved communication and marketing efforts to build awareness of opportunities in career readiness
- The value of a 4-year plan for high school created in 8th grade, and revisited annually, as opposed to just transitioning from 8th to 9th grade
- The realization that not all career readiness activities are “equity builders” – for example, Youth Apprenticeships are seen by some as an “equity destroyer” because they are mostly undertaken only by those with certain advantages
- College readiness programs such as AVID, work-based learning, and ACP in general need to be sufficiently allocated for in terms of staffing
- Work-based learning should be positioned and supported as much more than a credit recovery strategy
- Some counselors have insufficient knowledge of ACP/career readiness; there is a need for more PD, resources, and staffing allocation

Focus groups with staff and students provided more detailed perceptions about the activities in question. In addition to perceptions about this specific district’s approach to ACP, the district’s infrastructure, and the extent to which the district appears to prioritize ACP, a number of key themes arose that are potentially more global in nature, and which fell under a number of categories:

## Awareness of Opportunities

- Students want opportunities communicated to them earlier and more effectively, mentioning communication occurring in “fun ways,” with “encouragement” and possible incentives for participation.
- Students want all activities, whether required or optional, to be “engaging,” “interactive,” “hands on” and “real world.”

## Supportive Relationships

- Students see adult support for learning about and taking on career readiness opportunities as crucial but report that there is insufficient access. They report that:
  - They want both information and encouragement from adults.
  - They need an authentic, trusting relationship with an adult, whether counselors or others, and that these relationships are not easy to develop.
  - Some students cannot find an adult who can relate to their culture, background, or identities.
  - There is a perception that adults typically only interact with students “with issues” or who are high-achieving. Students who self-identify as neither of these perceive that they are only able to interact with adults if the students make efforts to reach out.

- Teachers/staff report barriers to building relationships, including the following:
  - Students who have experienced trauma and are “emotionally unavailable,” which is the case for some staff members as well.
  - The ratio of staff to students.
  - An instructional model that does not allow for cohorts who can build and maintain relationships.

## Barriers to Participation in High-Leverage Activities

- **Awareness.** As mentioned, students feel there is a lack of effective communication and encouragement around these activities.
- **Self-doubt** on the part of students regarding their eligibility, preparation, or “fit” for these activities. Students again cited encouragement as a means to address self-doubt.
- **Misconceptions** about who can participate, the “this isn’t for people like me” problem. Support and encouragement from both staff and peers were viewed as a remedy for this barrier.
- **Lack of interest towards one’s future.** This perception is growing across this age demographic, spurred by trauma, world events, the economy, COVID-19, and other factors.
- **Undocumented status**, which prevents access to some programs, particularly work-based learning.
- **Insufficient language support** for English learners.

**Recommendations made to District B were mostly specific to their context, but were informed and supported by findings from the accompanying literature review (see [Appendix C](#) for the full literature review). The recommendations derived from the review, however, merit reporting to a wider audience, and are as follows:**

“At the state and national level, programs related to academic and career planning are being advanced and modernized to meet the needs of a changing workforce. Each of the programs identified in this literature review—career and technical education, work-based learning, youth apprenticeships, industry-recognized credentials, and dual enrollment—have been identified as improving student outcomes. Data at the state and national level also show that within each of the programs there are student populations that are over-represented and student populations that are under-represented. Gaps in some of the programs identified here (dual enrollment, career and technical education, advanced placement) have been extensively researched, while researchers have only recently begun to examine gaps in some of the other programs (work-based learning, industry recognized credentials, youth apprenticeships). Below we identify the research-based strategies for increasing participation in each of the programs. Here are identified strategies that cross-cut all of the programs:

- Disaggregated data review identifying who is over-represented and who is under-represented
- Increasing communication around the program, including communicating information earlier to students and families, and specifically identifying how participating will benefit them
- Increasing and possibly where appropriate targeting student advising (earlier and more frequent)
- Increasing the supports offered to students once they are enrolled in the program (for example, tutoring, mentoring, peer support, flexible schedules)
- Investing in Career and Technical Education (CTE) staff to increase access and remove barriers (for example, increasing student advisors, increasing tutors, increasing course offerings)
- Increasing student preparation prior to their involvement in the program (depending on the program, this may be academic preparation, study skill preparation, or soft skills preparation)
- Removing cost barriers
- Removing transportation barriers
- Removing or changing requirements to participate in these programs
- Implicit bias, anti-racist, and cultural responsiveness training to ensure that educators, counselors, and school leaders believe all students can succeed
- Equity needs to be central in the work as the policy landscape around CTE changes and a growing number of students participate in CTE
- Review programs for access and quality”

## Summary of Case Studies

Key findings relevant to both case study sites and of likely relevance to other Wisconsin districts include the need for:

- district-level organization and support for ACP and career readiness programming;
- all staff buy-in and engagement;
- distributed leadership;
- infrastructure that promotes and permits safe and supportive student-staff relationships for all;
- a comprehensive program that includes vertical articulation between middle and high schools, horizontal articulation, and integration across all content;
- a focus on engaging, interactive, hands-on, and “real world” student activities;
- varied and effective communication of career readiness opportunities to build student awareness;
- data collection and analysis to recognize and address participation gaps;
- intentional efforts to remove barriers to participation in optional activities such as unnecessary requirements or unduly burdensome application procedures.

The majority of these components have been identified and communicated since the inception of ACP in Wisconsin, but given that the COVID-19 pandemic created added challenges and setbacks, a renewed focus on these infrastructural and programmatic goals would likely benefit all districts.

# ACP/Career Readiness Outcomes

This section of the findings examines Evaluation Question #4 (what, if any, changes have occurred in terms of student outcomes?) and Evaluation Question #5 (what, if any, associations between career readiness activities and outcomes can be measured at school or student levels?). To answer these questions, this report provides results by year of ACP implementation and by levels of ACP implementation. The three outcomes examined this year include ACT performance, four-year high school completion rate, and post-secondary enrollment. As this is the first year the evaluation examines the post-secondary enrollment outcome, results related to this outcome should be considered preliminary.

The four measures of ACP implementation include ACP infrastructural element implementation (Infrastructure); equitable access to all ACP opportunities (Equitable); regular, ongoing, and dedicated time for ACP activities (Dedicated ACP); and ACP student activity component implementation (Student Activities). These measures of implementation come from the 2017-18 through 2020-21 ACP surveys. Impacts presented throughout this section on these four measures show the estimated change in outcome for each level of increase in level of implementation (not yet started, initiated, implemented, and institutionalized). The inclusion of these metrics specifically examines Evaluation Question #5. As a point of reference for the following outcome impacts, Table 8 provides the statewide average for each outcome for the baseline years (2014-15 through 2016-17).

**Table 8: ACP Outcome Baseline Averages**

OUTCOME	STATEWIDE AVERAGE 2014-15 THROUGH 2016-17
ACT Composite Score	19.9
ACT ELA Score	16.4
ACT STEM Score	20.3
Four-Year High School Completion Rate	90.1%
Initial Post-Secondary Enrollment	58.4%
Initial Post-Secondary Enrollment Two-Year Institution	19.3%
Initial Post-Secondary Enrollment Four-Year Institution	39.5%

# OUTCOME FIGURES

For each of these outcomes, this report includes a figure of the estimated change (or impact) associated with ACP in each of the four years of implementation from 2017-18 through 2020-21.

## HOW TO READ



Each of the graphic figures that follows in this section includes a small circle which indicates the estimated impact of ACP on the relevant outcome in each of the four years of implementation and for four measures of ACP implementation.



Outlined circles indicate estimated impacts not statistically significant from zero.



Solid circles indicate estimated impacts statistically significant from zero.

\*Results for this year may be biased due to COVID-19 and should be interpreted with caution.

## ACT Performance

The first outcome examined in this report is ACT performance, both overall (as measured by composite score) and in English Language Arts (ELA) and STEM. Figure 3I shows the estimated change associated with ACP on average ACT composite score. As seen from this figure, there were small, but statistically significant, decreases in average composite score associated with ACP overall in each year of implementation with the exception of 2020-21 where there was a larger decrease associated with ACP.

The estimated impact in 2020-21, however, is intertwined with any possible impacts related to COVID-19 and should be taken with caution. There is a smaller likelihood of COVID bias in 2019-20 as the statewide exam took place prior to many schools' transition to virtual instruction in mid-March of that school year. While these results prior to the pandemic are negative, they are also small, with the largest estimated impacts being less than a half of a point on the composite scale. Measures of implementation saw statistically significant, but very small, positive increases in average ACT performance associated with higher levels of implementation of infrastructure and student activities.

**Figure 3I: Estimated Impact of ACP on Average ACT Composite Score**

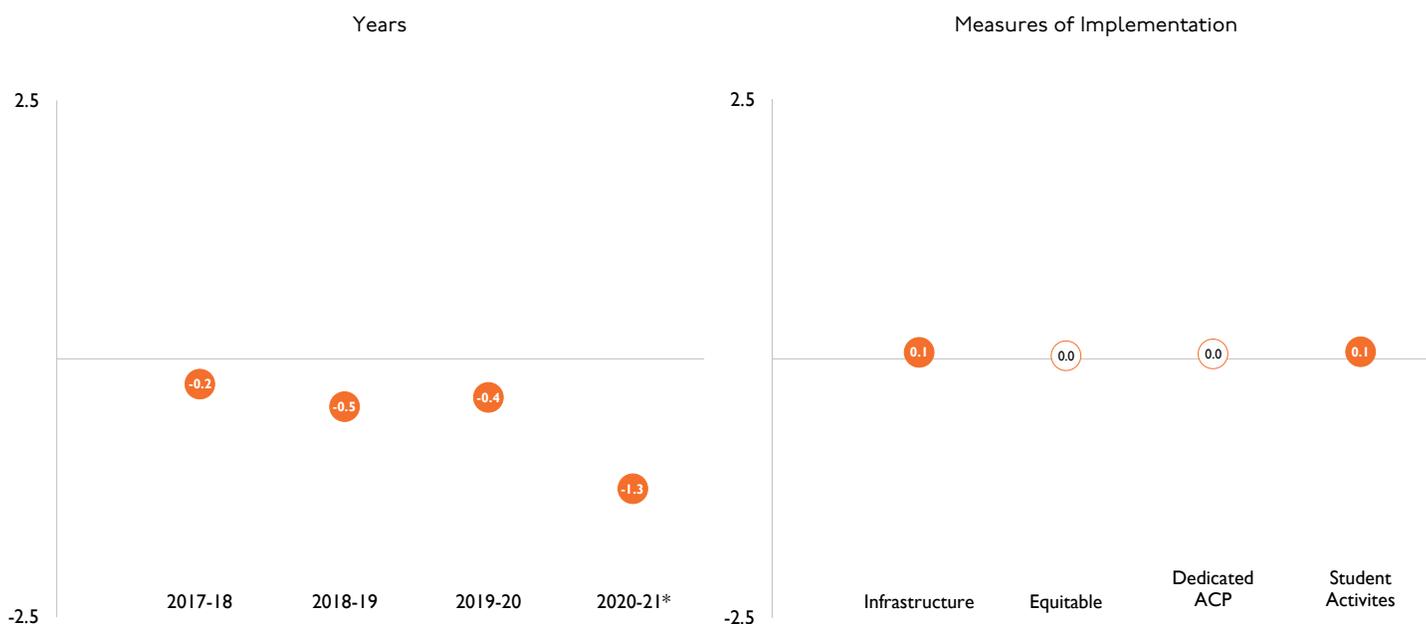
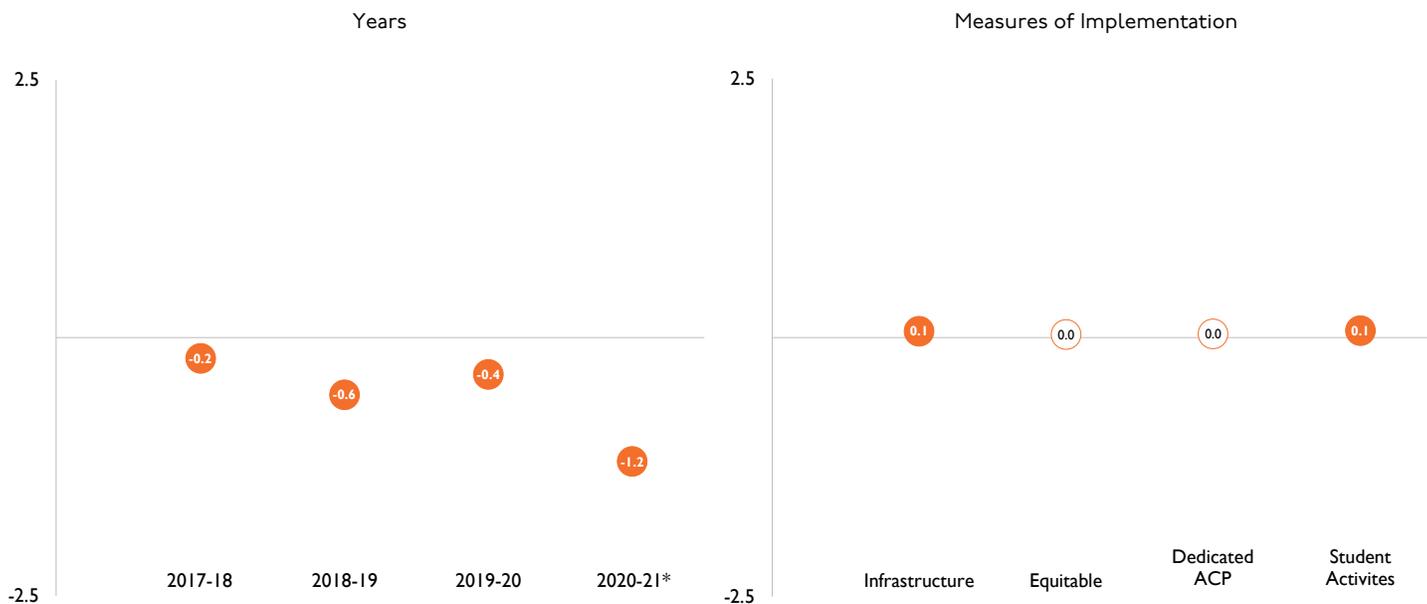


Figure 32: Estimated Impact of ACP on Average ACT ELA Score



Figure 33: Estimated Impact of ACP on Average ACT STEM Score

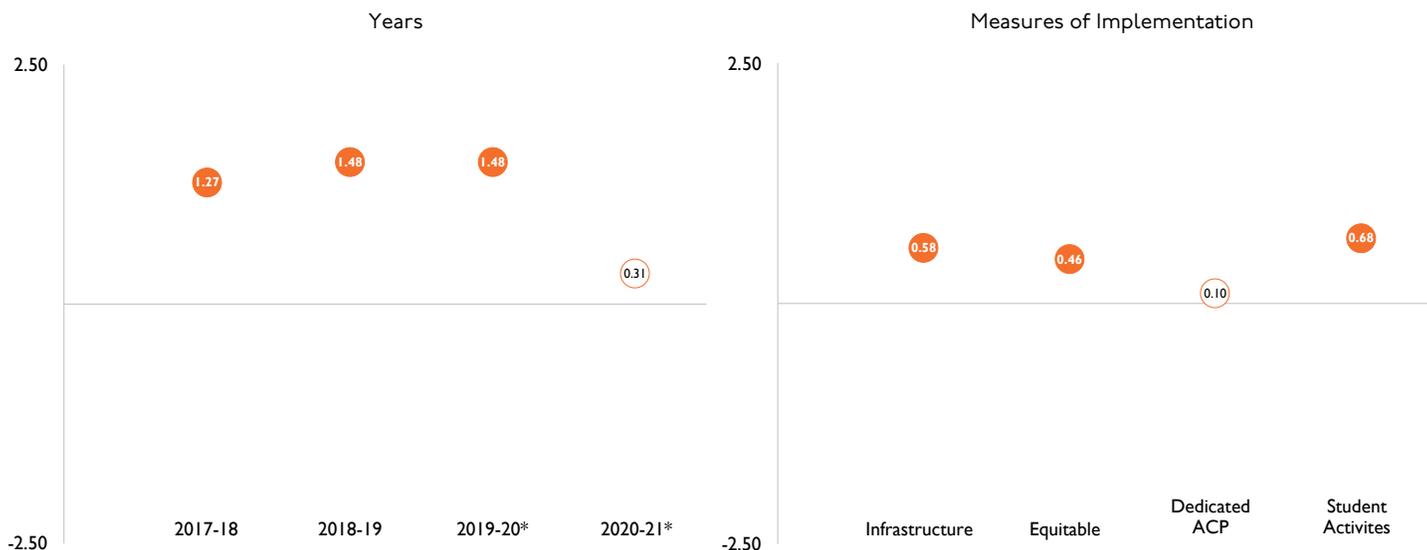


The results for ELA (Figure 32) and STEM (Figure 33) were similar to the results for ACT overall. There were statistically significant decreases in average scores associated with ACP in each year of implementation. The decreases were smaller (about 0.5 points on average) in STEM prior to the pandemic, and somewhat larger in ELA (approximately 1.5 points on average). Similar to ACT performance overall, there were larger decreases associated with 2020-21, likely due to the pandemic. In STEM, measures of implementation related to infrastructure and student activities were positively associated with very small increases in average ACT performance. In ELA, all four measures of implementation were associated with small decreases in average ACT performance.

## High School Completion

The next outcome examined in this evaluation is four-year high school completion rate. Figure 34 shows the estimated change in four-year high school completion rate associated with ACP overall in each year of implementation as well as with the four ACP implementation metrics. As indicated, there are statistically significant increases in the high school completion rate associated with ACP in Years 1, 2, and 3 of implementation (2017-18 through 2019-20). These estimated impacts represent an increase of approximately 1.3 percentage points in Year 1 and 1.5 percentage points in Year 2 and Year 3. Results may be biased in Year 3 and Year 4 due to COVID-19 and should be interpreted with caution. Measures of implementation related to infrastructure, equitable implementation, and student activities were all associated with statistically significant small positive increases in high school completion rates (approximately 0.5 percentage points).

**Figure 34: Estimated Impact of ACP on Four-Year High School Completion**

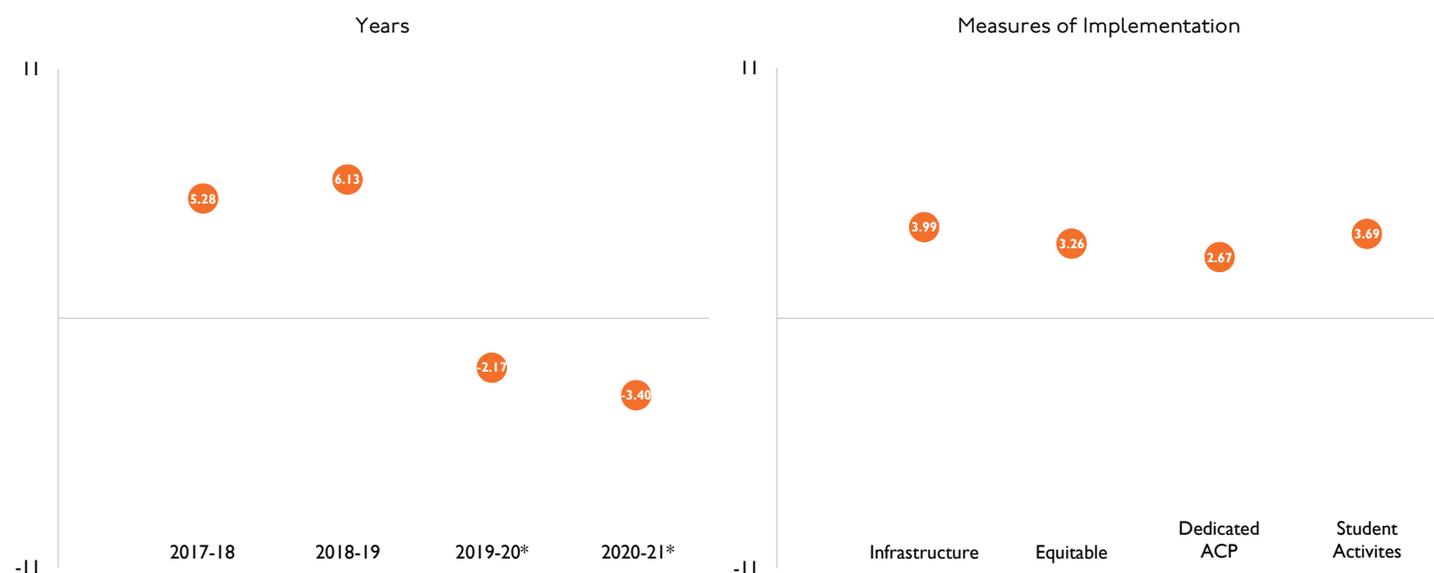


## Post-Secondary Enrollment – Preliminary Results

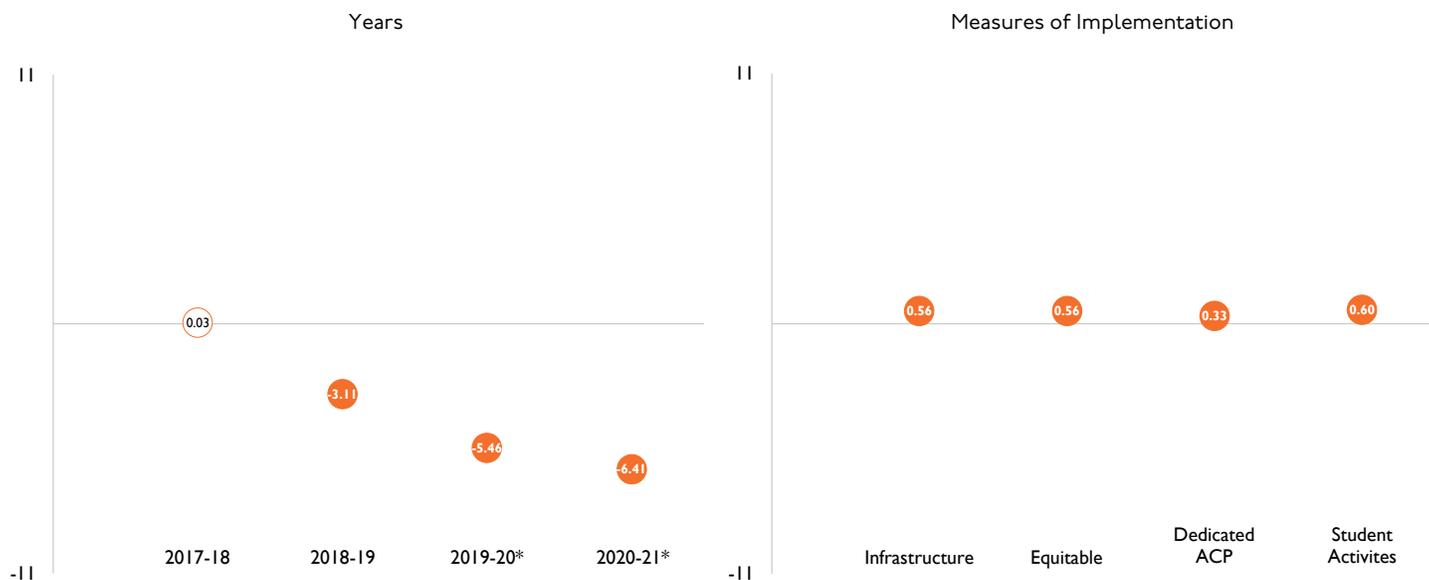
The final outcome examined in this evaluation is initial post-secondary enrollment rate. This rate is calculated as the percentage of high school completers that enrolled in a post-secondary institution by the first fall following completion. Figure 35 shows the estimated change in initial post-secondary enrollment rate associated with ACP overall in each year of implementation as well as with the four ACP implementation metrics. There are statistically significant increases in post-secondary enrollment associated with ACP in Years 1 and 2 of implementation (2017-18 and 2018-19). These estimated impacts represent an increase of approximately 5.3 percentage points in Year 1 and 6.1 percentage points in Year 2. In Year 3 and Year 4 (2019-20 and 2020-21), there were statistically significant decreases associated with ACP (approximately 2 to 3 percentage points lower), though these results are likely biased due to COVID-19 and should be interpreted with caution. All four measures of implementation were associated with statistically significant positive increases in post-secondary enrollment (approximately 2.5 to 4.0 percentage points).

In addition to examining initial post-secondary enrollment overall, the evaluation also examined enrollment specifically for two-year institutions (Figure 36) and four-year institutions (Figure 37). Results for two-year institution enrollment are lower than overall, with estimated changes in initial post-secondary enrollment rate associated with ACP being near zero in Year 1 and statistically significant and negative in the following years. There are, however, smaller but still significant and positive changes in enrollment in two-year institutions associated with all four measures of implementation. Contrary to enrollment in two-year institutions, results for enrollment in four-year institutions are larger than for enrollment overall. The estimated changes in initial post-secondary enrollment in four-year institutions associated with ACP are positive and significant in all four years of ACP (though larger in Year 1 and Year 2). As with enrollment overall, all four measures of implementation were associated with statistically significant positive increases in post-secondary enrollment in four-year institutions. Again, results presented for 2019-20 and 2020-21 should be interpreted with caution as there are likely downward biases in those years due to COVID-19.

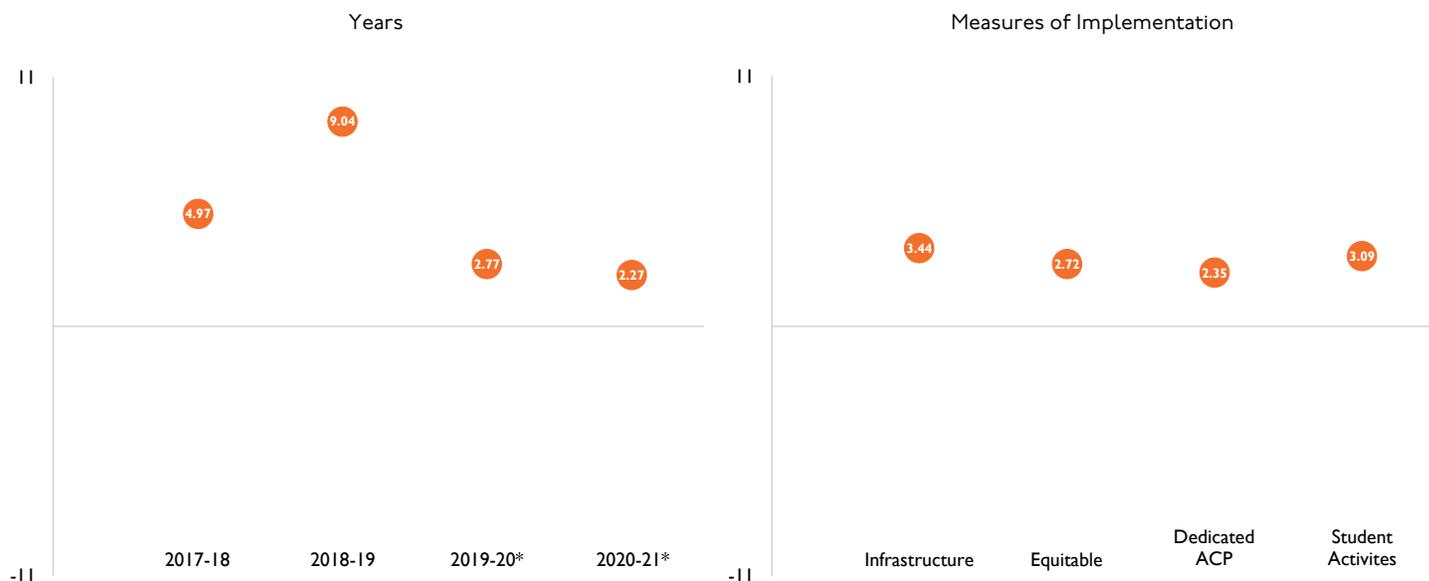
Figure 35: Estimated Impact of ACP on Initial Post-Secondary Enrollment



**Figure 36: Estimated Impact of ACP on Initial Post-Secondary Enrollment in Two-Year Institution**



**Figure 37: Estimated Impact of ACP on Initial Post-Secondary Enrollment in Four-Year Institution**

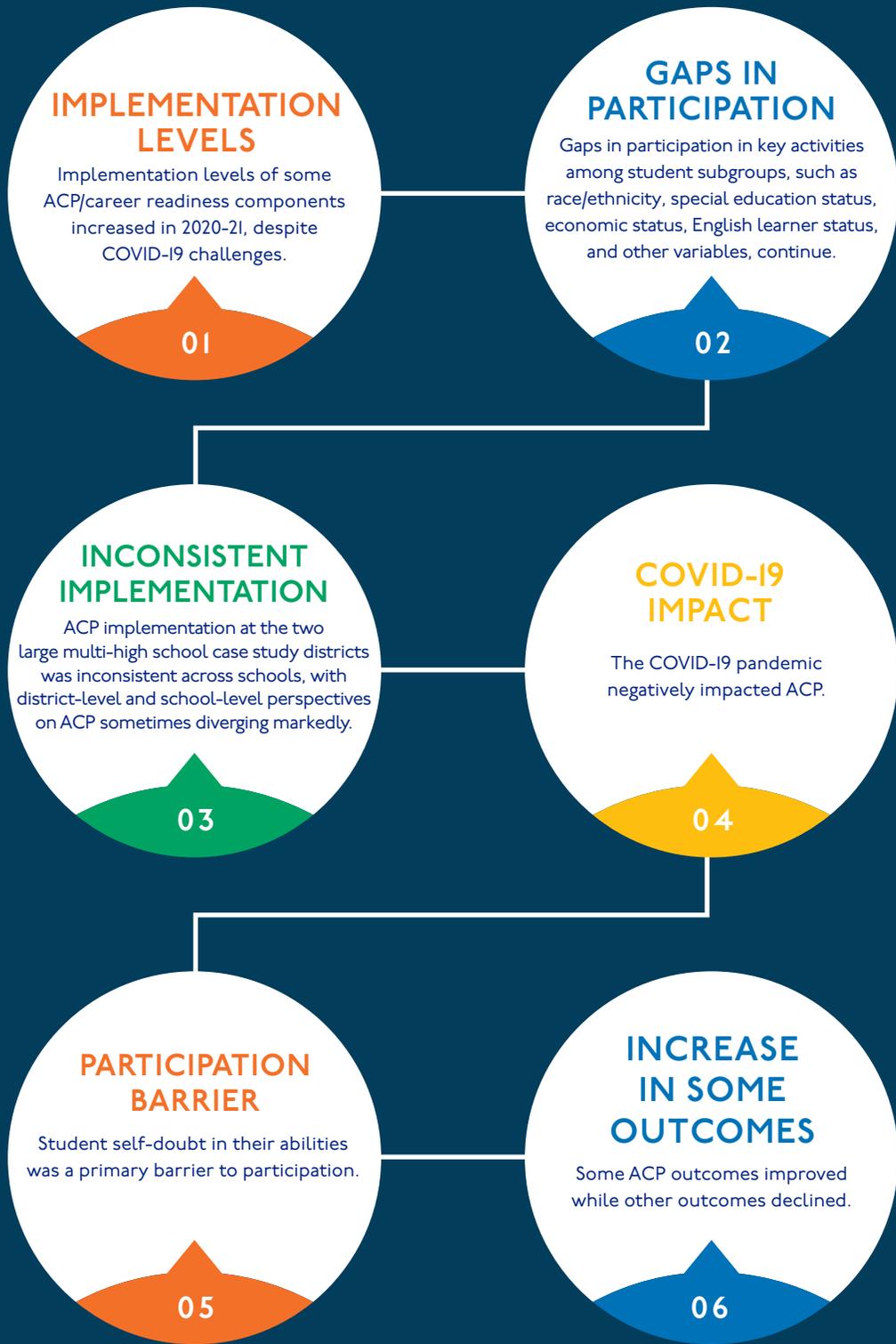


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## Section 3

# Key Findings and Recommendations

# KEY FINDINGS



# Key Findings and Recommendations

The following are the key takeaways from the 2021-22 evaluation and recommendations tied to those key findings.

## 01 Implementation levels of some ACP/ career readiness components increased in 2020-21, despite COVID-19 challenges.

Participation increased from previous years for Youth Apprenticeships, State Skills Standards Co-ops, Industry Recognized Certifications, and dual enrollment. There were other components that saw decreases in implementation, however, including participation in non-certified work-based learning, participation in AP or IB courses, and Xello lesson completion.

**Recommendation #1:** Continue to monitor implementation trends over time.

**Recommendation #2:** Investigate possible reasons for increases in participation among some activities, even in the face of COVID-19-related challenges, and leverage any lessons learned.

## 02 Gaps in participation in key activities among student subgroups, such as race/ ethnicity, special education status, economic status, English learner status, and other variables, continue.

In some cases, gaps have narrowed slightly, while in other cases, they have increased.

**Recommendation #3:** Schools and districts should begin/continue to track disaggregated participation data across time. DPI can continue to provide support for this.

**Recommendation #4:** Continue/increase professional learning offerings around equity in ACP and career readiness activities on the state, regional and local levels.

## 03 ACP implementation at the two large multi-high school case study districts was inconsistent across schools, with district-level and school-level perspectives on ACP sometimes diverging markedly.

As identified and reiterated in previous annual evaluation reports, building and maintaining an all-school (and all-district) culture of ACP is a necessary component for success.

**Recommendation #5:** Multi-school districts should strive for a clearly defined and communicated, well-supported district approach to ACP and career readiness that allows for contextual differences while still insisting on providing equitable opportunities and support for **all** students matched to their interests and needs. DPI currently provides many resources to support these efforts.

**Recommendation #6:** Districts should consider ways to support communication efforts between high schools and to facilitate the transition between 8th and 9th grade to maintain momentum in career readiness activities from middle to high school.

## 04 The COVID-19 pandemic negatively impacted ACP.

The COVID-19 pandemic negatively impacted ACP (and nearly all facets of education). In addition to negative impacts on student (and staff) mental health, the past two years have seen a sharp increase in student reports of hopelessness, lack of interest in their future, and even the belief that they will “have no future.”<sup>4</sup>

In addition to increasing mental health supports overall, finding intentional means to support the building and maintaining of safe and supportive adult/student relationships is now more important than ever. DPI should continue/increase these supports and ensure stakeholders are aware of the many mental health supports offered by the Student Services, Prevention and Wellness Team.

4 Hickman, C.H., Marks, E.M., Pihkala, P., Clayton, S., Lewandowski, R.E., Mayall, E.E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *The Lancet*, 5(12), e863-e873. [https://doi.org/10.1016/S2542-5196\(21\)00278-3](https://doi.org/10.1016/S2542-5196(21)00278-3)

While stakeholders sometimes characterize ACP as “just one more thing we don’t have time for,” working to shift to a philosophy of viewing student preparation for life as the rationale for everything that schools do addresses this barrier to success. An approach that stimulates student interest by prioritizing connections to “real life,” hands-on and interactive activities, post-secondary opportunities, and a sense of purpose can increase student engagement in both career readiness and school in general.

Schools and districts can address and counter the increasingly common belief among young people that, in part due to fears about climate change, they will “have no future.” By building “resilience, self-efficacy and agency...by encouraging and supporting their involvement in activities to both mitigate and adapt to climate change”<sup>5</sup> and other threats to students’ well-being, schools would be further preparing young people to cope and thrive – the core tenet of ACP and schooling overall. As further research emerges, state level support for these efforts could increase.

### 05 **Connected to Key Finding #4, student self-doubt in their abilities was a primary barrier to participation.**

However, students consistently presented a means to address this barrier: they discussed the need for “encouragement” from teachers and other school personnel to apply to, prepare for, take on, persist in, and be successful in optional activities such as AP classes, dual enrollment, and work-based learning. For the following recommendations, DPI should continue to emphasize and support these efforts.

**Recommendation #10:** ACP processes should be developed/refined to make them student centered and built upon the foundation of a positive relationship with an adult advisor.

**Recommendation #11:** Misperceptions and outdated beliefs about who an activity “is intended for” among students, staff, and other stakeholders need to be actively combatted through communication efforts, messaging, selection of business and community connections, and continued encouragement.

5 Sanson, A.V., van Hoorn, J., & Burke, S.E.L. (2019). Responding to the impacts of the climate crisis on children and youth. *Child Development Perspectives*, 13(4), 201-207. <https://doi.org/10.1111/cdep.12342>

**Recommendation #12:** All staff need to be of the mind that all students can succeed. Implicit bias, anti-racist, and cultural responsiveness training can support this important mind-shift. More generally, intentional efforts to diversify school staff to reflect student demographics will address equity across all facets of school.

**Recommendation #13:** Equity needs to be central in all ACP and career readiness efforts, including collecting and analyzing data related to participation in career readiness activities, recognizing and addressing gaps, and identifying and removing barriers to access and participation.

### Some ACP outcomes improved while other outcomes declined. 06

The fourth year of tracking outcomes data continues to show evidence of an associated positive change in four-year high school completion rates and an associated negative change in ACT scores (possibly due to ACP’s role in focusing on post-secondary options other than college and a decreased emphasis on ACT scores at many colleges). A new examination of initial post-secondary enrollment rates shows preliminary evidence of a positive change associated with ACP, especially for four-year institutions. During COVID-impacted years, however, there were decreases across all outcomes compared to pre-ACP baseline years. Associations between higher levels of implementation of ACP infrastructure, equitable access to ACP opportunities, dedicated ACP time, and student activity components generally showed positive associations with high school completion, post-secondary enrollment, and overall ACT performance (but not ACT ELA performance), especially for infrastructure and student activity components. There continue to be limitations to these findings; for example, the possibility of interference from other, co-occurring policy changes and other factors cannot be determined given the statewide roll-out of ACP.

**Recommendation #14:** Continue to track ACP outcomes longitudinally to further understand any impacts of the program during the COVID-19 pandemic and forward.

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## Section 4

# Appendices

## Appendix A: Logic Model

### GOAL STATEMENT: Every student in Wisconsin graduates ready for career, community, and lifelong learning by:

- Participating in the district's ACP process leading to an individual academic and career plan that reflects postsecondary education and career goals and identifies any personal barriers to success along with supportive services and/or strategies to overcome those barriers.
- Having the opportunity to participate in a career pathway that prepares students for in-demand, high paying careers
- Gaining a comprehensive understanding of labor market information, in-demand career pathways, and postsecondary learning paths that lead to in-demand careers.
- Developing the skills to succeed in careers, community, and lifelong learning including (but not limited to): collaboration, communication, critical thinking, creativity, digital literacy, time management, and global competency

### ASSUMPTIONS

- Students will be more engaged in education when tied to post-high school plans and outcomes.
- Safe, supportive relationships between students and adults are a key factor in ACP success.
- ACP has the potential to address issues of equity.
- ACP can and must support all possible post-high school pathways.
- Partnerships between educators and employers are essential to the ACP process.

### CONTEXT

- Wisconsin is a local-control state; ACP “looks different” across districts and schools.
- Wisconsin’s urban, suburban, and rural districts have varying access to employment and post-secondary opportunities.
- WI ACT 20 (2013) allocates funding for ACP and includes certain requirements.
- Wisconsin has large access/opportunity/participation gaps among student sub-groups across a wide variety of outcomes.
- LMI predicts ongoing shortages of skilled employees across many sectors.

# K12 Career Readiness Logic Model

State level - DPI

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	MEASURES
State Funding <ul style="list-style-type: none"> <li>• ACP</li> <li>• Transition Grants</li> <li>• Youth Apprenticeships (DWD)</li> </ul>	Provide an ACP web-based tool to all districts	Xello Usage	Districts and schools improve their ACP implementation more extensively and with better quality	ACP District Self-Assessments
Federal Funding <ul style="list-style-type: none"> <li>• Perkins</li> <li>• 21<sup>st</sup> CLC Grants</li> </ul>	Fund and support CESA ACP coordinators to provide professional learning and resources to districts	CESA ACP coordinators provide district outreach and support, training, professional learning, and (monitoring/data collection?)		Career Readiness statewide survey of schools
DPI Team <ul style="list-style-type: none"> <li>• CTE</li> <li>• SSPW</li> <li>• SPED</li> </ul>	Fund, support and develop local and regional career pathways	Regional career pathways developed and implemented		CLNA District Reports
Regional Career Pathways Coordinators	Provide funding and support for career readiness activities and programs in OST programs.	CLC provide more career readiness activities and programs	More students participate in career pathways	Improved Outputs and Outcomes in next levels of the Logic Model
DPI website and WISElearn Resources	Fund and support PTP for students with disabilities	Strengthen the connection between ACP and PTP	More students participate in WBL, IRCs, CTSOs and Dual Enrollment	Roster and Career Education Reporting data (career pathway participation, WBL and Dual Enrollment participation, IRC completion)
WEC Evaluation	Create guidance, resources, trainings and other supports	Career Readiness community of practice, website, implementation self-assessment, and other tools	More industry engagement/WBL participation	DPI and DWD records on employers offering CLBES and/or WBL assoc'd w/RCPs.
Post-Secondary Education Partnerships	Support the WEC evaluation study: surveys, case studies, and output/outcome data analysis	Annual evaluation report and mini reports		
LMI				
REDOs	Provide state funding and support for YA programs	DWD YA staff and YA Coordinators provide outreach and state, regional and local support to districts, employers and students		

## K12 Career Readiness Logic Model

### Local Level – Districts and Schools

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	MEASURES
State-provided materials and guidance	Creating a district career readiness team and ACP Graduate Profile	Develop a district-wide career readiness culture	Students engage in more and higher quality Career Readiness and ACP-related activities	Student participation in Xello, dual enrollment, AP/IB, IRCs, CBL
Xello	ACP planning, creation of infrastructure and development of/integration into curriculum	Local ACP plan and infrastructure for ACP		
CESA support				
Local expertise and administration – ACP & CTE coordinators and career readiness teams	<b>Professional Learning</b> Implementation of ACP curriculum and activities as well as career-based learning experiences. Activities related to the ACP Graduate Profile are provided to all students. Other activities are optional to meet the needs of individual academic and career plans.	<b>Full-staff participation in ACP</b> Offering opportunities in ACP activities and career-based learning experiences: Career Pathways Career Fairs, College visits, etc. Dual enrollment/credit AP/IB courses Final projects Financial Literacy	More and higher-quality student ACPs <sup>1</sup> Increased staff buy-in and all-school culture of ACP	Career Readiness statewide survey of school ACP coordinators
School staff				
Local businesses and community			Business and community engagement increases and deepens	CLNA District Reports
Local/regional post-secondary institutions	<b>Relationship-building/mentoring of students</b>	<b>Increased student buy-in and participation in ACP activities</b>	Family engagement increases and deepens	CLNA District Reports and Xello
Local Perkins Funding	Community and family awareness and engagement activities	Increased community and family participation in ACP-related activities		Roster, Career Education Reporting, and demographic data
Regional career pathways and regional career pathway coordinators	<b>Form stronger connections between ACP-related activities career readiness programs, and OST program activities.</b>	<b>Increased integration of career readiness and OST programming</b>	Equity gaps related to career readiness and ACP close	
Youth Apprenticeship Coordinators	Identify equity gaps, explore root cause of gaps, and implement evidence/research-based strategies that will close gaps	Increase in strategies to assist students in special populations participating in career readiness activities and programs		
TIG Coordinators				
OST Programs	Activities to promote awareness of supportive services for students with barriers	Provide students with information to supportive services to address individual barriers		
REDOs				

<sup>1</sup> No current quantitative measures for this outcome

## K12 Career Readiness Logic Model

### Individual Level - Students

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	MEASURES
District/school-provided ACP programming, infrastructure, curriculum and offerings	Students participate in:  ACP lessons, Xello activities, course content, CTE courses, final projects, resume-building, mock interviews, FAFSA completion, etc. etc.	ACP Plan, Xello lesson completion	More students keep pace with credit attainment and graduation	Graduation rate On-time graduation
Career Pathway Programs	Career fairs, college visits, speakers, etc.	Increased awareness of careers and opportunities	Students are better prepared to enter the workforce or post-secondary education	ACT scores
Access to supportive services	Career-based and Work-based Learning	Increased participation in various types of work-based learning, IRCs and other credentials	More students who enter college are ready for credit bearing work, persist, and graduate	Post-secondary participation and enrollment
Postsecondary Transition Planning support and services	Career Pathways	Career pathway participation	Students experience higher employment rates and earnings potential <sup>2</sup>	
Career readiness opportunities in OST programs	Dual credit/enrollment AP/IB courses ACT exam	Dual credit and AP/IB participation	More students aware of career options, in-demand careers, and postsecondary education and training options <sup>3</sup>	
District/school staff	Relationship-building/mentoring	CTSO participation data – to be specified	More students express interest in a career area of interest <sup>4</sup>	
Community/business partnerships	CTSOs			
Family support				
Student input				

### Glossary of Acronyms

21st CCLC = 21st Century Community Learning Center  
 ACP = Academic and Career Planning  
 ACT = American College Testing  
 AP/IB = Advanced Placement, International Baccalaureate  
 CBLE = Career-based Learning Experience  
 CESA = Cooperative Educational Service Agency  
 CLNA = Comprehensive Local Needs Assessment  
 CTE = Career and Technical Education

CTSO = Career and Technical Student Organization  
 DWD = Department of Workforce Development  
 FAFSA = Free Application for Federal Student Aid  
 IRC = Industry-recognized Certification/Credential  
 LMI = Labor Market Information  
 OST = Out of School time Program  
 PTP = Postsecondary Transition Planning  
 REDO = Regional Economic Development Organization

SPED = Special Education  
 SSPW = Student Services, Prevention, and Wellness  
 TIG = Transition Improvement Grant  
 WBL = Work-based Learning  
 WEC = Wisconsin Evaluation Collaborative  
 YA = Youth Apprenticeship

<sup>2</sup> No current output measure for this activity.

<sup>3</sup> No current quantitative measures for workforce preparedness.

<sup>4</sup> No current quantitative measures for this outcome.

## Appendix B: Technical Methodology

This appendix provides detailed information on the ACP implementation and outcome measure calculations and demographic subgroups utilized in this report. WEC requested statewide, student-level data from DPI for the school years 2014-15 through 2020-21 related to student demographics and ACP measures of implementation and outcomes. Data sets received from DPI included:

- Student attributes file with information on student demographics, school, and grade level
- High school completion file
- Post-secondary enrollment file
- ACT results file
- Coursework Completion System file with information on courses taken and AP and IB courses (2014-15 and 2015-16)
- Roster file with information on courses taken and AP and IB courses (2016-17 through 2020-21)
- Career Education Reporting system file with information on career-based learning and dual enrollment (2018-19 and 2020-21)

Data sets provided also included district and school information for students.

The following sections of this appendix detail the subgroups used for analysis, specific data preparation methods needed for certain data sets, the measures used to examine ACP implementation, and the outcomes analysis.

### Subgroups of Analysis

For all implementation measures, this report breaks down results by school year, grade level (where applicable), race/ethnicity, socioeconomic status, disability status, English learner status, and CESA. For all reported statistics, the information on grade level, race/ethnicity, economically disadvantaged status, disability status, and English learner status came from the student attributes file. DPI defines economically disadvantaged as eligible for free or reduced-price lunch and disability as participation in special education. CESAs are tied to specific schools and not students.

### Data Preparation

Several data sets provided for use in the evaluation required additional preparation before analysis could occur. Reasons for this additional preparation included but were not limited to missing values, possible errors, and duplicate records. To link implementation or outcomes with particular school characteristics, the evaluation used school information from the data set with the measure in question unless unavailable or missing, in which case the evaluation used school information from the student attributes file.

## Implementation Measures

This report examines several implementation measures derived from the data sets described above based on available data: work-based learning participation, IRC participation, AP or IB enrollment, and dual enrollment. Work-based learning participation (specifically youth apprenticeships, State Skills Standards Co-Ops, and non-certified work-based learning), IRC participation, and dual enrollment use data from the Career Education Reporting system. These files contain student information including an indicator for whether a student participated in each of the various types of work-based learning, IRCs, or dual enrollment. AP and IB course enrollment used data from the Coursework Completion System and the newer replacement system, Roster. These files contain course level information including an indicator for whether or not a course was an AP or IB course. The metric for participation in these activities used in this evaluation is the percentage of students in at least one activity. Students who were in more than one school are represented once only when we report the statistics at the state level and for subgroups other than CESA. When we compute the statistics for different CESAs, if a student was in two different schools and if those schools had two different values for CESA, the student enters in the computation of the statistics for both CESAs. If all the schools attended had the same value for CESA, the student enters the computation only once. Since DPI changed systems during the period of examination (2014-15 through 2020-21) for AP and IB participation, the evaluation only includes records from schools that appeared in all years of data to allow for stability in this measure across data systems. Finally, the evaluation excluded students missing demographic information.

## Outcomes Analysis

The outcome measures include ACT composite scores, ACT ELA scores, ACT STEM scores, four-year high school completion rate, initial post-secondary enrollment rate, initial post-secondary enrollment in a two-year institution, and initial post-secondary enrollment in a four-year institution. Initial enrollment is defined as a post-secondary enrollment date between June 1 of the school year of high school completion and November 1 of the school year after high school completion. The denominator for the post-secondary enrollment rate is all high school completers. Since this is the first year of examining post-secondary enrollment rates as an outcome, results from analyses of this outcome are preliminary.

To understand how ACP is associated with the examined outcomes, the evaluation used an interrupted time series methodology. This type of analysis uses the same schools prior to ACP implementation as a comparison group to determine the effect of ACP once it was implemented statewide in 2017-18 and beyond. This methodology is ideal since there are no non-ACP students and schools in the year of implementation that could be used as a comparison. This analytic method uses a pre/post design to follow and compare the same schools both before and after exposure to ACP implementation. The treatment group was all schools in 2017-18 and after (as ACP is statewide). For a comparison group, the evaluation used all of the same schools throughout the state in the years prior to ACP implementation. To account for any long term trends occurring throughout the state, the analysis used three prior years of baseline data on the intended outcomes (specifically 2014-15 through 2016-17). The evaluation then used multivariate regression models to estimate the associated impact of ACP on these outcomes while controlling for a variety of student- and school-level characteristics. One concern in evaluating the trends of these outcomes through 2020-21 was the potential bias arising from the COVID-19 pandemic, the transition to virtual instruction for many schools throughout the state mid-March of the 2019-20 school year, and the continuation of COVID-related practices throughout 2020-21. To account for any potential COVID-related bias, the evaluation used a slight modification from the traditional interrupted time series methodology and examined each year of ACP outcomes individually. Thus, any downward biases related to COVID would only impact the 2019-20 and 2020-21 estimates of impact and not the prior years.

The general model specification for the outcomes analysis was:

$$Y_{isy} = \gamma ACP Year Ind_y + \beta X_{iy} + \pi Location_{sy} + \vartheta T_y + \delta_s + \varepsilon_{isy}$$

In this specification:

- $Y_{isy}$  is the outcome of interest for student  $i$  in school  $s$  and year  $y$ .
- $\gamma ACP Year Ind_y$  is a vector of binary indicators indicating the year of ACP implementation (ACP Year 1 or 2017-18, ACP Year 2 or 2018-19, etc.).
- $\beta X_{iy}$  is a vector of student-level covariates including gender, race/ethnicity, special education status, economically disadvantaged status, and English learner status.
- $\pi Location_{sy}$  is a vector of indicators for the locale description of a school including city, suburb, town, and rural.
- $\vartheta T_y$  is a continuous time trend.
- $\delta_s$  are school fixed effects to control for any unobserved effects that vary by school.

Because of the multi-level nature of the specification, this multivariate regression also clustered the standard errors at the school level.

The analysis also explored associations for levels of ACP implementation. The evaluation identified levels of ACP implementation from the 2017-18 through 2020-21 ACP surveys.<sup>1</sup> Specifically, four different measures of ACP implementation were identified: infrastructural element implementation, equitable access implementation, dedicated ACP time implementation, and student activity component implementation. For each of these implementation metrics, the evaluation combined all relevant survey item responses into a single score with values ranging from 0 (not yet started) through 3 (institutionalized). Implementation scores near 1 indicate the initiated level, and scores near 2 indicate the implemented level. Since not all schools responded to each

year of the survey, if a school responded in any one year, the evaluation assigned response values for that school to other missing years. The evaluation did not include schools not responding to any year of the survey in this analysis. For these models, the specification was adjusted to include an interaction between treatment overall (1 indicating treatment year and 0 indicating non-treatment year) and implementation level instead of an  $ACP Year Ind_y$  indicator.

Further specific variations on the model specification above for each applicable outcome follow.

For the high school completion outcome and post-secondary enrollment outcomes, for each student, the outcome is binary (1 if the student completed high school within four years, 0 otherwise; 1 if the student enrolled in a post-secondary institution after graduation, 0 otherwise). As a result, a linear regression is no longer feasible and the evaluation used a logit regression. The form of the logit regression is:

$$\ln\left[\frac{Pr(Y_{isy})}{1-Pr(Y_{isy})}\right] = \gamma ACP Year Ind_y + \beta X_{iy} + \pi Location_{sy} + \vartheta T_y + \delta_s + \varepsilon_{isy}$$

To assess the robustness of findings, the evaluation tested two alternative specifications. The first alternative specification followed a more traditional interrupted time series specification under the assumption of no COVID-related biases. This specification used a binary indicator for ACP in years of implementation to measure any immediate impact of ACP and an ACP year trend indicator to measure any changes in the trend over time instead of the year-by-year indicators used in the general specification. The first alternative specification produced different results compared to the main specification, further confirming the need for the general specification's adjustment to account for COVID biases. The second alternative specification allowed for each school within the analysis to have their own specific time trend. This specification provided interaction terms for the continuous time trend with each school fixed effect. The evaluation tested this model to account for any variation in the overall trend in the outcomes across the state between schools. The second alternative specification produced similar results to the main specification presented above.

<sup>1</sup> Refer to the Academic and Career Planning Evaluation Implementation Year School-Level Survey Results, Academic and Career Planning 2018-19 Evaluation Survey Results, Academic and Career Planning Survey 2019-20, and Academic and Career Planning Survey 2020-21 reports for further details. See <https://dpi.wi.gov/acp/quality>.

## Multiple Comparisons Correction

Since this evaluation report includes the results from multiple estimates of the impact of ACP for several outcomes, there is an increased likelihood for false positive results that would be statistically significant due to random chance rather than actual program impact. For example, a 0.05 significance level implies that 5 percent of statistically significant estimates are produced by random chance. The evaluation used the Benjamini-Hochberg procedure to correct for these multiple comparisons by accounting for the total number of statistical tests as well as the strength of the estimates, as measured by p-values.<sup>2</sup>

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<sup>2</sup> Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B (Methodological)*, 57(1), 289-300. <https://doi.org/10.1111/j.2517-6161.1995.tb02031.x>

## Appendix C: Literature Review

### What are strategies to address participation gaps in ACP related activities?

At the state and national level, programs related to academic and career planning are being advanced and modernized to meet the needs of a changing workforce. Each of the programs identified in this literature review, career and technical education, work-based learning, youth apprenticeships, industry-recognized credentials, and dual enrollment, have been identified as improving student outcomes. Data at the state and national level also show that within each of the programs there are student populations that are over-represented and student populations that are under-represented. Gaps in some of the programs identified here (dual enrollment, career and technical education, advanced placement) have been extensively researched, while researchers have only recently begun to examine gaps in some of the other programs (work-based learning, industry recognized credentials, youth apprenticeships). Below we identify the research-based strategies for increasing participation in each of the programs.

Here are identified strategies that cut across all of the programs:

- Disaggregated data review identifying who is over-represented and who is under-represented
- Increasing communication around the program, including communicating information earlier to students and families, and specifically identifying how participating will benefit them
- Increasing and possibly where appropriate targeting student advising (earlier and more frequent)
- Increasing the supports offered to students once they are enrolled in the program (for example, tutoring, mentoring, peer support, flexible schedules)
- Investing in CTE staff to increase access and remove barriers (for example, increasing student advisors, increasing tutors, increasing course offerings)
- Increasing student preparation prior to their involvement in the program (depending on the program, this may be academic preparation, study skill preparation, or soft skills preparation)
- Removing cost barriers
- Removing transportation barriers
- Removing or changing requirements to participate in these programs
- Implicit bias, anti-racist, and cultural responsiveness training to ensure that educators, counselors, and school leaders believe all students can succeed
- Equity needs to be center in the work as the policy landscape around CTE changes and a growing number of students participate in CTE
- Review programs for access and quality

## Career and Technical Education (CTE)

### Summary:

Research has shown that CTE programs have made been transformed to address the needs of the modern workforce. CTE programs expand options for learners, empower them to choose a meaningful and sustainable career, and prepare them with the real-world skills for success in college and careers. Equity issues have persisted in CTE programs. Some strategies to address:

- Improve and increase messaging and outreach used to attract students and participants.
- Provide students with career-exploration courses and opportunities before they need to commit, middle school.
- Give students knowledge about program content, potential career trajectories, and expected labor-market outcomes helps them choose programs.
- Use students and program alumni to vouch for the opportunities their programs provide and to describe the programs in ways that resonate with their peers.
- Parents need opportunities to share their perspectives and concerns, and to share with them information on the academic and career courses offered and the work-based learning opportunities available.
- Provide bridge programs that aim to raise the reading and math levels of prospective students (for programs that have entry requirements).
- Provide students with soft skills training.
- Provide alumni mentors (who look like the students).
- Build in peer support.

**Advancing CTE: State leaders connecting learning to work. (2018). Examining Access and Achievement Gaps. Making Good on the Promise.** <https://files.eric.ed.gov/fulltext/ED592250.pdf>

- Use data to identify and resolve inequities in CTE
  - Use root cause analysis to get to the bottom of enrollment and performance gaps
  - This requires talking with school staff, students, and families
- Acknowledge and dismantle current and historical inequities in CTE
  - Build trust
  - Demonstrate that CTE is a viable option for career success for everyone

**Advancing CTE: State leaders connecting learning to work. (2018). Understanding the Equity Challenge in CTE. Making Good on the Promise.** <https://files.eric.ed.gov/fulltext/ED592252.pdf>

- Discusses the benefits of CTE programs
- Describes who participates in CTE nationally (race/ethnicity, gender, special population) (2016-17)
- Provides an overview of CTE's history of discrimination
- The brief attempts to confront the negative aspects of CTE's legacy and define the key challenges learners face today
- Quality of CTE programs has improved, access needs to improve
- Counselors, teachers and other school-based staff should be trained to recognize and counteract bias
- Geographic access to programs
- Remove selection criteria
- Flexible schedule to allow for more student access

**Durate, M. (2019, February 19). A Guide for State Leaders: Equity in Career and Technical Education (CTE). *American Youth Policy Forum*. <https://www.aypf.org/blog/a-guide-for-state-leaders-equity-in-career-and-technical-education-cte/>**

- Growing body of research illustrating students who participate in CTE programs are better prepared for academic classes, less likely to need remedial education, and more likely to enroll in a two-year college.
- Leaders are being challenged to confront historical inequities to ensure quality CTE programs are accessible to every student.
- Use data to leverage accountability to draw attention to inequities, commit to data transparency, examine root causes of access gaps.
- Communicate the promise of CTE to communities that were previously not served equitably.

**Estes, A., & McCain, B. (2019). Four Strategies to Address Equity in CTE. *National Association of State Boards of Education*. [https://nasbe.nyc3.digitaloceanspaces.com/2019/09/Estes-McCain\\_September-2019-Standard.pdf](https://nasbe.nyc3.digitaloceanspaces.com/2019/09/Estes-McCain_September-2019-Standard.pdf)**

- Investigate the data to identify discrepancies in access, enrollment, and success for different populations. Consider the following reflective questions:
  - Which students are overrepresented?
  - Which students are underrepresented?
  - How does the population of CTE students vary across career clusters?
  - Are students enrolling in programs aligned to industries in which individuals with their gender, racial, ethnic, or socioeconomic background are underrepresented?
  - How does performance and success vary across student populations?

- Rebuild trust by talking to students and families and reengaging historically marginalized populations. Consider the following reflective questions:
  - In what languages are materials presented? In what languages can students and families provide feedback?
  - Is information presented in plain, understandable language, without jargon?
  - What timeframe for providing feedback is given? Who may be excluded due to timeline?
  - What delivery method is given for providing feedback? Who may be unable to access?
  - Use trusted stakeholders (school counselors, teachers, and CTE students) to identify how the programs can better serve historically marginalized populations.
- Identify and remove barriers to access
  - Provide funding and resources
  - Provide academic preparation
  - Career awareness and advising
  - Be culturally aware
- Take measures to ensure learner success
  - Address climate and culture – create a safe, welcoming environment
  - Students need help with the transition to the next step, whether they choose to go to a four-year college, community or technical college, apprenticeship, or straight into the workforce. Increased career advising. Increase awareness of the variety of postsecondary options and the steps needed.

Hodge, E., Dougherty, S., & Burris, C. (2020). *Tracking and the Future of Career and Technical Education: How effects to connect school and work can avoid the past mistakes of vocational education*. National Education Policy Center. Retrieved from <https://nepc.colorado.edu/publication/cte>

- Concerns remain about the availability of resources for different CTE pathways, their relative status, and the degree to which adults working within schools are problematically sorting students explicitly or implicitly into different course-taking pathways.
- Propose the following recommendations for enacting CTE in ways that support the equitable distribution of educational opportunity:
  - Whole-school models of CTE, school and district leaders should monitor enrollment at the school and program levels by student subgroups to ensure equitable access. Whole-school models of CTE often have admissions criteria, which should be adjusted or eliminated if there are disproportionalities in access – if, for example, a high-demand STEM program was shown to have a disproportionate number of higher income students. If admissions criteria are not adjusted in such a situation, students from minoritized backgrounds are likely to be underrepresented. Admission by randomized lottery is an example of an adjustment.
  - In comprehensive high schools, administrators should build a schedule that allows for participation in CTE electives without de facto tracking of students. Whether CTE is offered via a career academy or standalone courses, students should have access to a broad variety of coursework with minimal or no levels within subjects. In addition, school administrators should work actively to help students learn about careers that they may not have considered, to eliminate or reconsider prerequisites that may impede access, and to build

teacher capacity for instructional differentiation to meet students' needs within heterogeneously grouped classes. They should also mount substantial information-sharing campaigns to inform students and families about current needs related to local workforce and postsecondary education options, as well as about potential earnings in those areas.

- School district and state policymakers must ensure equitable distribution of resources across schools and for students across districts to avoid de facto tracking of specific subgroups of students into specific careers.
- To avoid mistakes of the past that replicated social stratification, researchers should carefully monitor the racial, ethnic, and socioeconomic patterns of CTE in all of its forms. The efficacy and equity of contemporary CTE trends is uncertain because too little is known about CTE course-taking nationally over the last 10 years.

James-Gallaway, C. J., Keist, J. A., & Rockey, M. (2020). *Advancing Equity in Career and Technical Education in Illinois*. Office of Community College Research and Leadership. Retrieved from <https://occrle.education.illinois.edu/docs/librariesprovider2/cte/advancing-equity-in-career-and-technical-education-in-illinois.pdf>

- Career and Technical Education for the 21st Century Act (Perkins V) was strengthened and expanded access
  - Individuals with disabilities
  - Individuals from economically disadvantaged families
  - Individuals preparing for nontraditional fields
  - Single parents
  - Out of workforce individuals
  - English learners
  - Homeless

- Youth who are in or who have aged out of foster care
- Youth with a parent who is a member of the armed forces
- Perkins V also calls for the disaggregation of data at the state and local levels to identify equity gaps.
- Study focuses on closing CTE gaps at the community college level.

**Kim, E., Flack, C., Parham, K., & Wohlstetter, P. (2021). Equity in Secondary Career and Technical Education in the United States: A Theoretical Framework and Systematic Literature Review. *Review of Educational Research, 91*(3), 356-396. <https://doi.org/10.3102/0034654321995243>**

- A review of 123 sources
- CTE research frequently examines access and participation measured by graduation rates and GPA.
- Few studies disaggregate outcome measures by student subgroups to better assess equity.
- Their review found that:
  - “Barriers to access existed particularly for girls, students with disabilities and BIPOC students.”
  - High school girls were less likely to participate in CTE.
  - CTE programs with strong industry partnerships were more effective in job placement for students.
  - Access to work-based internships and apprenticeships is “distributed inequitably across students.”
  - CTE programs with well-defined career pathways, aligned core academics, and students placed in smaller learning communities had the most positive educational outcomes.
  - They conclude that when reviewing programs, it is important to not only look at access but also the quality of the programs.

- “Schools that focus on supporting all CTE students in completing their pathway or program requirements, through flexible scheduling, transportation, and wraparound services show promise for equity.”

**Rosen, R., & Molina, F. (2019). *Practitioner Perspectives on Equity in Career and Technical Education*. MDRC. Retrieved from <https://files.eric.ed.gov/fulltext/ED596458.pdf>**

- How can the design and delivery of CTE programs promote equity?
- Begins with the message and outreach used to attract students and participants
  - Poorly delivered messages, complicated application processes, materials available only in English, and a lack of adequate counseling can create a selection process that unfairly weeds out certain potential candidates.
- Provide students with career-exploration courses and opportunities before they need to commit, middle school.
- Give students knowledge about program content, potential career trajectories, and expected labor-market outcomes helps them choose programs, students should be given “maps” that lay out the career and the average salaries if they follow the pathway.
- Use students and program alumni to vouch for the opportunities their programs provide and to describe the programs in ways that resonate with their peers.
- Parents need opportunities to share their perspectives and concerns, and to share with them information on the academic and career courses offered and the work-based learning opportunities available.
- Bridge programs that aim to raise the reading and math levels of prospective students (for programs that have entry requirements).
- Provide students with soft skills training.

- Provide alumni mentors (that look like the students) – mentors that can come to the schools and work with the students, share their experience in the field.
- Peer support – one example, two student interns in any given workplace so they can support each other during the placement.

**Serrano, C. S. (2018).** *Access and Equity Through Career and Technical Education.* *Education Week.* <https://www.edweek.org/teaching-learning/opinion-access-and-equity-through-career-and-technical-education/2018/04>

- CTE – a proven strategy that expands options for learners, empowers them to choose a meaningful and sustainable career, and prepares them with the real-world skills for success in college and careers.
- Examples from Denver Public Schools
- ACEConnect – a service partnership between CareerConnect and the Division of Student Equity & Opportunity to ensure options for effective career and college preparation are available and accessible to ALL students in Denver Public Schools. Provides career pathways and complementary programs of services to prepare students identified as special populations.
- Strategies in the classroom:
  - Students’ equitable access to rigorous content, participation, peer interaction, and teacher attention
  - Encourage students’ cultural preferences, native languages, and varied cultural perspectives
  - Supporting access to and/or extension of content to meet the diverse academic and linguistic needs of individual students

## Work-Based Learning

Summary:

- Much of the WBL literature appears to be at the state/national/international level, or the postsecondary level, not the high school level.
- Hardly any research on reducing participation gaps.
- “Social capital” might be a useful concept here (who students know, their networks).
- Emphasis on relationships with youth and supports/preparation.

**Ross, M., Kazis, R., Bateman, N., & Stateler, L. (2020).** *Work-Based Learning can Advance Equity and Opportunity for America’s Young People.* *Brookings.* [https://www.brookings.edu/wp-content/uploads/2020/11/20201120\\_BrookingsMetro\\_Work-based-Learning\\_Final\\_Report.pdf](https://www.brookings.edu/wp-content/uploads/2020/11/20201120_BrookingsMetro_Work-based-Learning_Final_Report.pdf)

- Lays out 3 “critical elements” of WBL:
  1. Positive relationships with adults that support growth and development
  2. Social capital that provides information and contacts regarding employment
  3. Work experiences that offer opportunities for hands-on learning and expose young people to new environments and expectations
- “Social capital is described most succinctly by the saying, ‘It’s not what you know; it’s who you know.’”
- Emphasized principles of creating relationships with youth (youth development principles)
- References Christensen Institute, which offers ways of measuring these elements (see next citation)

Charania, M., & Fisher, J.F. (2020). *THE MISSING METRICS: Emerging practices for measuring students' relationships and networks*. Christensen Institute. <https://www.christenseninstitute.org/wp-content/uploads/2020/07/THE-MISSING-METRICS.pdf>

- Four-dimensional approach for measuring students' social capital:
  - Quantity of relationships
  - Quality of relationships
  - Structure of networks (whom the student knows and how)
  - Ability to mobilize relationships (mindsets/skills students need)

Cahill, C. (2016). *Making Work-Based Learning Work. Jobs for the Future*. <https://files.eric.ed.gov/fulltext/ED567846.pdf>

- This article is a mix of what schools/educators, employers, and policymakers can do.
- Outlines 7 principles for effective models of WBL
- At the school/educator level:
  - “help ensure that participants have sufficient preparation to take on complex tasks. In the case of work-based learning for youth, educators and intermediaries may also need to help employers understand and appreciate the abilities of young people under the age of 18.”
  - “work with employers to identify their skills needs, clarify what students should learn and accomplish through work-based learning, and develop experiences that meet the needs of all stakeholders.”
  - Awarding academic credit.
  - “develop curricula that provide students with opportunities to reflect on their experiences with work-based learning and the knowledge and skills they acquired.”
  - Comprehensive student supports such as advising/coaching, case management/counseling services, flexible schedules.

Cease-Cook, J., Fowler, C., & Test, D.W. (2015). *Strategies for Creating Work-Based Learning Experiences in Schools for Secondary Students with Disabilities*. *Teaching Exceptional Children*, 47(6), 352-358. <https://doi.org/10.1177/0040059915580033> [https://www.researchgate.net/publication/276437590\\_Strategies\\_for\\_Creating\\_Work-Based\\_Learning\\_Experiences\\_in\\_Schools\\_for\\_Secondary\\_Students\\_With\\_Disabilities](https://www.researchgate.net/publication/276437590_Strategies_for_Creating_Work-Based_Learning_Experiences_in_Schools_for_Secondary_Students_With_Disabilities)

- Lays out a multitude of strategies for:
  - Career exploration
  - Job shadowing
  - Work sampling
  - Service learning
  - Internships
  - Apprenticeships
  - Paid Employment

**New York City Department of Education Work-Based Learning Toolkit** <http://wbltoolkit.cte.nyc/>

- Designed to assist school leaders, work-based coordinators, teachers and their partners in designing, implementing and supporting quality work-based learning activities for high school students.
- Aligned with the Domains of College and Career Readiness.
- Includes:
  - WBL overview
  - WBL activity guides
  - WBL program fact sheets and tools
  - Employer participation options
  - Option, tools, and tips for remote or virtual WBL activities

## Youth Apprenticeships

### Summary:

- As with some of the other areas, there is not much research on participation gaps in Youth Apprenticeships, and many of the research and recommendations are at the state level
- Transportation often referenced as a barrier to entry.
- Other barriers might include the stigma of participating in such a program, cost, and the requirements of the program (GPA, attendance, behavior).
- Reports often discussed how schools/districts could collect and use data for continuous improvement.

**National Alliance for Partnerships in Equity. (2020, July 28). *Equity in Youth Apprenticeship Programs. New America.*** <https://napequity.org/wp-content/uploads/PAYA-Workbook-Fnl-2020-05-29.pdf>

- Toolkit providing resources and exercises to address access, belonging, and continuous improvement.
- Programs must recognize barriers to equity: pay gaps, concentration in lower-paying occupations, regional issues, social stigma, information gaps, program requirements.
- Barriers to access: existence, transportation, cost of participation, digital divide, physical barriers, language.
- Fostering belonging through involvement, attachment, commitment, beliefs.
- Continuous improvement with PIPE (Program Improvement Process for Equity) - organize, explore (data), discover (root causes), select (strategies), act.

**Advance CTE. (2020). *Improving Youth Apprenticeship Data Quality: Challenges and Opportunities.*** [https://cte.careertech.org/sites/default/files/files/resources/Improving\\_Youth\\_Apprenticeship\\_Data\\_Quality\\_2020.pdf](https://cte.careertech.org/sites/default/files/files/resources/Improving_Youth_Apprenticeship_Data_Quality_2020.pdf)

- Workgroup convened with PAYA (Partnership to Advance Youth Apprenticeship)
- Identified 5 challenges
- Determining what to measure
- Clarifying roles and responsibilities
- Building the infrastructure
- Accessing data
- Scaling and sustaining
- Strategies for using data
- Evaluating program impact
- Monitoring equity
- Informing expansion efforts
- Telling the YA story
- Recognizing learner competencies

**Mauldin, B. (2014). *Exploring how Career Technical Education, Work-Based Learning and Apprenticeship can Address Youth Unemployment and Meet Employer Needs for Skilled Workers.* Annie E. Casey Foundation.** <http://hdl.voced.edu.au/10707/409448>

- Review of several CTE, WBL, and apprenticeship programs (youth and otherwise)
- YAs often involved high-level decision makers in company and public school system
- Different selection metrics
- One program targets at-risk youth – the lower a student's performance in attendance, discipline, and number of credits, the more likely they are to be selected
- Others require a GPA above a certain threshold and good record on attendance and behavior

- Several recommendations, including a list of supports (not all included here):
- Transportation
- Child care
- Appropriate clothing
- Tools required for the job
- Communications and problem solving
- Screening systems in place to identify individual barriers
- Adequate prep and counseling

**U.S. Department of Education, Office of Career, Technical, and Adult Education. (2017). *Opportunities for Connecting Secondary Career and Technical Education (CTE) Students and Apprenticeship Programs*. [https://cte.careertech.org/sites/default/files/files/resources/Opportunities\\_Connecting\\_Secondary\\_CTE\\_Apprenticeships.pdf](https://cte.careertech.org/sites/default/files/files/resources/Opportunities_Connecting_Secondary_CTE_Apprenticeships.pdf)**

- Discusses apprenticeship programs more broadly, with one example of a YA (among 8 case studies).
- Many of the recommendations deal with things outside of a school's or district's control (i.e., on the employer, state funding, or legal side). Some applicable findings:
  - Buy-in must come from all stakeholders (teachers, employers, families, students)
  - There's no perfect one-size-fits-all design
  - Connect program enrollment to other data (completion, graduation rates, postsecondary enrollment)
  - Educate parents and students on participation benefits
  - Market postsecondary opportunities (such as earning college credit)
  - Remove access barriers by offering transportation to/from site

## Industry-Recognized Credentials

Summary:

- A lot of this research and these recommendations are geared to state level education leaders – as these IRC programs expand in high schools.
- Articles reference a lack of research on industry-recognized credentials, effect of credential attainment in high schools, and note that the credential landscape has changed significantly.
- Not a huge number of articles addressing gaps in industry-recognized credentials.

**Castellano, M., Stone, J., & Stringfield, S. (2005). *Earning Industry-Recognized Credentials in High School: Exploring Research and Policy Issues*. *Journal of Career and Technical Education, 2(2), Spring, 7-34*. <https://eric.ed.gov/?id=EJ1069518>**

- Concern about costs of maintaining programs
- Concern about the cost for students to take the certification exams
- Not many students earn industry-recognized credentials (in the schools in the study)
- Those students that do earn, have a solid career plan
- Lack of student knowledge about IRCs

**Achilles, J., Ekwurzel, E., Perrault, P., & Pietruszynski, M. (2019). *Credentials as a Tool for Equity and Regional Economic Growth: A Funders' Primer*. *Grantmakers for Education*. <https://eric.ed.gov/?id=ED600668>**

- The American Council on Education has developed a set of six dimensions of quality for credentials. They include: transparency, modularity, portability, relevance, validity, and equity.

- Equity = is the credential an enabling mechanism for promoting education, social and or economic mobility?
- The community benefits when all students understand and can choose among the assortment of options available in their greater community.

**New Skills for Youth. (2018). Credential Currency: How States Can Identify and Promote Credentials of Value.**

[https://ccsso.org/sites/default/files/2018-10/Credential\\_Currency\\_report.pdf](https://ccsso.org/sites/default/files/2018-10/Credential_Currency_report.pdf)

- Resource is geared to state leaders.
- Ensuring students' equitable access to earning high-value industry credentials is a critical step toward enabling their economic and career success.
- Access and review direct student data – not aggregate or self-reported – in order to identify gaps.

**Rosen, R. & Dalporto, H. (2020). Does Technology-Based Advising Promote Equity in Career and Technical Education? MDRC: Building Knowledge to Improve Social Policy.** [https://www.mdrc.org/sites/default/files/2020\\_CTE\\_Advising\\_and\\_Equity.pdf](https://www.mdrc.org/sites/default/files/2020_CTE_Advising_and_Equity.pdf)

- While Perkins does support states to engage specific underrepresented groups in nontraditional career options, emerging evidence suggests that operationalizing equity in many high-quality CTE opportunities may still be a challenge. For example, STEM-related CTE programs disproportionately enroll students who are both White and male. Female students are overrepresented in traditionally female fields, such as health services or child care, and higher-performing students may be more likely to enroll in highly competitive programs.
- These patterns of differential enrollment in CTE suggest that entrenched gender-, race-, and class-based inequities may undermine efforts to both strengthen and expand the opportunities that CTE can make possible for students.

- A first step toward reaching that goal [ensure that all students have access to high-quality CTE programming] is to make sure that all students can get both information about and support for making decisions about CTE and career-based opportunities.
- Most schools are not able to increase access to counselors by reducing student-to-counselor rates.
- Many districts have turned to technology-based advising to supplement the career counseling capacity of their guidance departments.

**Timmons, M. (2020, December 1). Industry Credentials Challenge: Equity of Access. EnvisionEdPlus.** <https://envisionedplus.com/2020/12/01/industry-credentials-challenge-equity-of-access/>

- Blog post about Ohio's new emphasis on earning industry credentials as a pathway to high school graduation.
- EnvisionEdPlus has been working with districts in Ohio as they adapt to Ohio's new graduation requirements, they have provided dozens of Operation Graduation Design Labs.
- Consistent worry of educators is that industry credentials are an essential-but-elusive ingredient that many students will need to earn high school diplomas when the new requirements take full effect.
- Blog explores the realities of access to industry credentials, especially for disadvantaged youth.
- Gaps identified in data indicate that just increasing opportunities to earn industry credentials likely won't be sufficient to ensure students are ready for what comes after high school, or even that they'll earn a high school diploma.
- Dig into engagement and student support strategies as well as structural barriers hiding within policies, practices and high school schedules.

- First step, staff need to develop a deep understanding of equity in education, it's long-term impact on young people, their own community and the global workforce.

**Roy, J. & Lambert, E. (2019). *Expanding Opportunities for High School Students to Earn Industry-Recognized Credentials*. New England Board of Higher Education.** <https://nebhe.org/journal/expanding-opportunities-for-high-school-students-to-earn-industry-recognized-credentials/>

- This is a post about a proposal in Massachusetts to expand opportunities for high school students to earn industry-recognized credentials. Gives an overview of some state examples.
- For students going directly into the workforce from high school and for those who enter but never complete college, credentials can be the difference between low-wage positions and better paying jobs that offer opportunities for growth.
- Earning credentials in high school can also lead to stronger preparation for higher education.
- In Florida, students earning credentials in high school were more likely to take Advanced Placement or dual-enrollment courses and to go to college.
- In Ohio, students can earn industry-recognized credentials in one of 13 career fields with a choice of more than 250 in-demand credentials.

**Walsh, M., O'Kane, L., Noronha, G., & Taska, B. (2019). *Where Credentials Meet the Market: State Case Studies on the Effect of High School Industry Credentials on Educational and Labor Market Outcomes*. Credentials Matter.** [https://www.burning-glass.com/wp-content/uploads/credentials\\_meet\\_market\\_report.pdf](https://www.burning-glass.com/wp-content/uploads/credentials_meet_market_report.pdf)

- Lack of research on education and labor market outcomes associated with earning an industry credential in high school. This report attempts to address the gap.

- Overall the report finds that earning a credential is associated with positive outcomes related to high school completion, community college enrollment and completion, and wages.
- The paper also reports on the characteristics of credential earners compared to the full CTE population.
- Collects data from 3 states.
- Differences in credential attainment can be found between gender, race, and ethnicity.
- This report doesn't explore barriers.

## Dual Enrollment

### Summary:

Research has demonstrated that students who participate in dual enrollment are more college ready. Low-SES students receive more benefit from dual enrollment than high-SES peers. Most benefit is received when taking two dual enrollment courses. Strategies for expanding access:

- Early and frequent communication with students and families about courses
- Confidence boosting and preparation of students for courses
- District or school paying associated fees and necessary materials
- Removing criteria or caps for enrollment
- Provide supports to students who enroll in courses (tutors)
- Providing transportation to campuses for courses
- Increase access to counselors

**An, B. & Taylor, J. L. (2015). Are dual enrollment students college ready? Evidence from the Wabash National Study of Liberal Arts Education. *Education Policy Analysis Archives, 23*(58).** <https://epaa.asu.edu/ojs/article/viewFile/1781/1624>

- Cognitive and noncognitive domains of college readiness measured
- Students who participated in dual enrollment tend to be more college ready than those who did not earn college credit in high school.

**An, B. P. (2013). The impact of dual enrollment on college degree attainment: Do low-SES students benefit? *Educational Evaluation and Policy Analysis, 35*(1), 57-75.** [https://journals.sagepub.com/doi/pdf/10.3102/0162373712461933?casa\\_token=flzRlqDlcoMAAA:AA:h2ZMFYXfjAGk-lnpW-xxa4AVkQOifkjZihL5Q9WeEjJW3NJhAui9-UTfjGscfnfhlKeXptOLV17](https://journals.sagepub.com/doi/pdf/10.3102/0162373712461933?casa_token=flzRlqDlcoMAAA:AA:h2ZMFYXfjAGk-lnpW-xxa4AVkQOifkjZihL5Q9WeEjJW3NJhAui9-UTfjGscfnfhlKeXptOLV17)

- Uses the National Education Longitudinal Study (N=8,800).
- Finds significant benefits in boosting rates of college degree attainment for low-income students while holding weaker effects for peers from more affluent backgrounds.
- Studies show that high-SES students are more likely to participate in course-work that better prepares them for college than their low-SES counterparts.
- Dual enrollment can serve as a means to improve postsecondary outcomes for low-SES individuals.
- First-generation college students who participated in dual enrollment were more likely to attain a college degree than similar nonparticipants.
- These programs may especially benefit those lower in the socioeconomic distribution.
- The majority of the gain was for those who took two courses in these programs.

- Students' selection into dual enrollment are needed to in order to understand better family, peer, and school influences that affect dual enrollment participation.
- Compared the influence of dual enrollment on college degree attainment to AP. Little difference.
- Dual enrollment programs may favor districts whose students often attend institutions that charge high tuitions and those who perform near the average on AP exams.
- AP tends to favor districts whose students enroll in relatively inexpensive colleges or those who perform exceptionally well on AP exams.

**An, B. P. & Taylor, J. L. (2019). A review of empirical studies on dual enrollment: assessing educational outcomes. *Higher Education: Handbook of Theory and Research (99-151)*. Springer.** [https://link.springer.com/chapter/10.1007/978-3-030-03457-3\\_3](https://link.springer.com/chapter/10.1007/978-3-030-03457-3_3)

- Focus is on the students.
- Examines who participated in dual enrollment and the relation between dual enrollment and educational outcomes.

**Barnett, E. (2018). Differentiated dual enrollment and other collegiate experiences: lessons from the STEM Early College Expansion Partnership. *VOCEDplus, 17*.** Retrieved from <https://www.voced.edu.au/content/ngv:79192>

Link above takes you to an overview website, then need to click the link that takes you to a SECEP website (with a lot of related reports) and there you can access the full report.

- Dual enrollment opportunities are often only given to students who are already succeeding in school.
- The STEM Early College Expansion Partnership (SECEP) was developed to increase access to dual enrollment courses and other collegiate experiences to students in traditional high school, based on the early/middle high school model.

- Schools committed to enabling at least 90% of students to engage in some form of college course-taking before graduating from high school.
- Informative tables, broken down by academic record, course focus and career focus.
- The courses for the “least academically advanced students” are still college level courses – similar to “Freshman Seminar or College 101” - these are often offered in partnership with the local community college.
- Other offerings for “least academically advanced students”: college brush-up programs for placement tests (so that they can enroll in dual-placement), on college campus experiences (college lab, participate in college club, use of college library), summer bridge programs (at tech/community colleges, learn soft skills and explore academic pathway), and CTE articulated credit programs.
- Students may be better positioned to take advantage of dual enrollment and other collegiate experiences if they know about them early and plan to participate – communicate early and often with students and parents – the range of options and address fears that students will struggle.
- Advisors work regularly with students and parents to help students decide which options make the most sense.
- Student supports – keeping track of how students are doing, teaching soft skills prior to courses, offering tutoring.
- School district pays additional fees.

**Barnett, E. & Kim, J. (2014).** *Expanding access to dual enrollment and college: A case study of Memphis city school.* National Center for Restructuring Education, Schools and Teaching. <http://nacep.org/docs/research-and-policy/MCSCaseStudy.pdf>

- Memphis structured its program to maximize access to dual enrollment courses by forming and strengthening partnerships and establishing effective administrative structures.
- Over a 4-year period Memphis City Schools, a large urban district, made a major commitment to invest in and expand its dual and concurrent enrollment program to give students from most of the high schools in the district a change to take college courses.
- Access was expanded through CTE courses (less stringent entry requirements).
- Offered classes that allowed for flexibility regarding GPA and ACT – for example College 101.
- Students received support to increase their chance of success – in-class and/or out of class (for example, academic coach, tutor – paid for by the district) plus peer support.
- Issues that need to be addressed in order for programs to be successful:
  - Limited number of teachers with credentials
  - Buy-in from school
  - Lack of student awareness
  - Lack of student confidence to take the courses
  - Transportation to courses on college campus
  - Limited staff time to help with administrative requirements

**Bragg, D.D., Kim, E., & Barnett, E.A. (2006).** *Creating access and success: Academic pathways reaching underserved students. *New Directions for Community College*, 2006(135), 5-19.* <https://onlinelibrary.wiley.com/doi/10.1002/cc.243>

- Describes nine pathways

**Cowan, J., & Goldhaber, D. (2015).** *How much of a “Running Start” do dual enrollment programs provide students? *The Review of Higher Education*, 38(3), 425-460.* <https://muse.jhu.edu/article/576572>

- Running Start program in WA state
- Impact: earn AA, enroll in college in year after high school
- No evidence that students are more likely to enroll in college full time
- Some evidence that participation shifts from 4-years to 2-years
- Selection on observables – no

**Giani M., Alexander, C., & Reyes, P. (2014).** *Exploring variation in the impact of dual-credit coursework on postsecondary outcomes: A quasi-experimental analysis of Texas students. *High School Journal*, 97(4), 200-218.* <https://eric.ed.gov/?id=EJ1026262>

- Sample: cohort of 9th graders in TX during 2000-01
- PSM matching to students from districts not offering DE (treatment students took classes, weren't just at schools that offered)
- Impacts on college degree attainment (13 pp), college access and enrollment (14 pp), and college credit accumulation (13 pp)
- No breakdowns by subgroups

**Gilbert, E. (2017).** *How Dual Enrollment Contributes to Inequality. *The Chronicle of Higher Education*.* <https://www.chronicle.com/article/How-Dual-Enrollment/241668>

- Dual enrollment contributes to inequality
- Financial, mainly

**Grubb, J.M., Scott, P. H., & Good, D. W. (2017).** *The answer is yes: Dual enrollment benefits students at the community college. *Community College Review*, 45(2), 79-98.* <https://doi.org/10.1177/0091552116682590>

- All students enrolling in community college in NE TN from 2008-2012
- PSM matching
- If dual enrollment, 3.4 times more likely to need remediation
- 2.5 times more likely to graduate in 2 years
- 1.5 times more likely to graduate in 3 years

**Karp, M. M., Calcagno, J. C., Hughes, K. L., Jeong, D. W., and Bailey, T. R. The Postsecondary Achievement of Participants in Dual Enrollment: An Analysis of Student Outcomes in Two States (2007).** <https://ccrc.tc.columbia.edu/media/k2/attachments/dual-enrollment-student-outcomes.pdf>

- Florida and NYC middle achievers do better
- Male and low-income peers benefit more

**Miller, T., Kosewicz, H., Wang, E. L., Marwah, E. V. P., Delhommer, S., and Daugherty, L. Dual Credit Education in Texas: Interim Report. (2017).** [https://www.rand.org/pubs/research\\_reports/RR2043.html](https://www.rand.org/pubs/research_reports/RR2043.html)

- Disparities in DE participation rates – by race/ethnicity, income, urbanicity, gender, academic background – exist and change across demographic groups over time.
- Disparities persist, and the research thus far is unable to pinpoint their specific causes.

**Patrick, K. (2019, May 23). 6 Ways to Make Dual Enrollment Programs More Equitable. The Education Trust.** <https://edtrust.org/the-equity-line/6-ways-to-make-dual-enrollment-programs-equitable/>

- Ways to make DE more equitable
- Make more students eligible by broadening entry requirements
- Dual enrollment info given to all HS families in all languages
- Require higher ed institutions to provide student advisement and support
- Ensure DE held to same standard as other college courses
- Get HS and college credit at completion
- More funding for diverse counselors

**Pierson, A., Hodara, M., and Luke, J. (2017). Earning college credits in high school: Options, participation, and outcomes for Oregon students. Education Northwest.** [https://ies.ed.gov/ncee/edlabs/regions/northwest/pdf/REL\\_2017216.pdf](https://ies.ed.gov/ncee/edlabs/regions/northwest/pdf/REL_2017216.pdf)

- IES study of Oregon
- Community college dual credit earners are more likely to be White, female, high achievers, and not economically disadvantaged.

**Roach, R., Vargas, J. G., David, K. M. (2015). Eliminating barriers to dual enrollment in Oklahoma. New Directions for Community College. 169(Spring), 31-38.** <https://onlinelibrary.wiley.com/doi/full/10.1002/cc.20130>

- Barriers in OK
- Financial, transportation, and academic admission standards
- Talks about how they can address these barriers
- Lowered ACT and GPA requirements
- Allowed Sophomores in addition to Juniors and Seniors to take courses

- If GPA fell below 2.0, students were placed on academic probation to allow them to continue enrollment and improve performance
- Teachers who are qualified to teach dual enrollment courses were allowed to
- Students were allowed to enroll in remedial courses

**Spencer, G. & Maldonado, M. (2021). Determinants of Dual Enrollment Access: A National Examination of Institutional Context and State Policies. AERA Open. 7.** <https://doi.org/10.1177%2F23328584211041628>

- What helps to improve access to DE?
- Policy mandates are the strongest predictors of DE participation.
- Suggested ways to provide more services to support students:
  - Improve outreach to parents
  - Partnerships with local colleges should include orientation programs and campus visits for students and families
  - Appropriately invest in staff to support and guide pathways in order to reduce barriers

**Stamm, L. (2010). Dual Enrollment: A strategy for educational advancement of all students. Blackboard Institute.** <https://academiccommons.columbia.edu/doi/10.7916/D8IG0KNQ>

- Need to address state policies in order for dual enrollment to be more available
- Online dual enrollment is one way to expand access, but this format does not often help the less academically capable high school students

Struhl, B., & Vargas, J. (2012). *Taking college courses in high school: A strategy guide for college readiness: The college outcomes of dual enrollment in Texas*. Washington, DC: Jobs for the Future. <https://files.eric.ed.gov/fulltext/ED537253.pdf>

- Sample: HS seniors in 2003-04
- Compared students who participated in DE with those who did not
- PSM
- Impacts on college degree attainment (13 pp), college access and enrollment (19 pp), and college credit accumulation (16 pp)
- White students in DE 2.21 times more likely to enroll in college than other white students, black students = 1.60
- Non-economically disadvantaged students 2.03 times more likely to enroll, 2.41 for economically disadvantaged students (same result as in 2013)

Taylor, J. L. (2015) *Accelerating pathways to college: The (in)equitable effects of community college dual credit*. *Community College Review*, 43, 355-379. <https://doi.org/10.1177/0091552115594880>

- Existing dual credit policies are inequitable

Taylor, J. L., & Pretlow, J. (2015). *Dual Enrollment Policies, Pathways, and Perspectives: New Directions for Community Colleges*. John Wiley & Sons. <https://onlinelibrary.wiley.com/toc/15360733/2015/2015/169>

- Criteria for dual placement are not grounded in research
- Remove criteria and restrict access
- Dual credit programs should be well publicized and integrated into student planning documents – increase awareness
- Expand school and community college partnerships around CTE – specifically between high school teachers and college teachers so that they have a more detailed understanding of their counterparts' teaching philosophy, student expectations, curriculum, pedagogy and assessment

U.S. Department of Education. (2019). *Dual enrollment: Participation and characteristics*. National Center for Education Statistics. Retrieved from <https://nces.ed.gov/pubns2019/2019176.pdf>

- Use High School Longitudinal Study of 2009
- 34 percent did dual credit
- Lower percentages of students whose parents don't have Bachelor's degrees (42 to 26%),
- White 38% and Asian 38%, Hispanic 30%, Black 27%
- Most (80%) students taking classes at own high school

Washington Student Achievement Council. (2016). *Dual Credit Report*. <https://files.eric.ed.gov/fulltext/ED573073.pdf>

- Strategies to address disparities:
  - Funding of fees
  - Provide/pay for transportation
  - Remove caps and grade requirements
  - Increase counselor to student ratios
  - Improve communications about dual-credit opportunities

Xu, D., Solanki, S., & Fink, J. (2021). *College Acceleration for all? Mapping Racial Gaps in Advanced Placement and Dual Enrollment Participation*. *American Educational Research Journal*, 58(5), 954-992. <https://doi.org/10.3102%2F0002831221991138>

- Documents patterns of enrollment gaps in advanced placement and dual enrollment programs. Specifically looking at racial gaps geographically and what factors help to mitigate and what factors exacerbate the disparities.
- Gaps exist in both programs, however gaps in AP are larger.
- Gaps are wider between White-Black than White-Hispanic.

- Local factors that are associated with higher overall program participation, such as larger number of AP courses offered and higher per-student instructional expenditures, as associated with WIDER racial gaps in AP enrollment.
- “Districts in states with stronger mandates in access to AP and DE programs have larger White-minority gaps than districts in states with weak mandates, indicating that White students, as compared with minority students, might be in a better position to take advantage of these types of incentives.”
- “...districts with greater resources surrounding college acceleration programs, while achieving strong AP and DE participation overall, may also engender racial disparity if there are inadequate efforts to prioritize equitable access”.
- Barriers may include “limited guidance about how to take advantage of AP and DE programs”.
- “Ability grouping, such as gifted programs... may server as a driver of segregation within schools along lines of race and family socioeconomic background.”
- Districts must make “intentional efforts to alleviate racial gaps in utilizing college acceleration resources.” Examples include “targeting students for advising” and making information easily available for both parents and students.
- Districts must also provide professional development opportunities around “explicit and implicit bias training to ensure that those who advise students for college acceleration programs do not hold biases that disadvantage underrepresented minorities.”

Zinth, J., & Barnett, E. (2018). *Rethinking Dual Enrollment to Reach More Students*. Education Commission of the States. [https://www.ecs.org/wp-content/uploads/Rethinking\\_Dual\\_Enrollment\\_to\\_Reach\\_More\\_Students.pdf](https://www.ecs.org/wp-content/uploads/Rethinking_Dual_Enrollment_to_Reach_More_Students.pdf)

- Many states, middle-achieving students barred from DE enrollment
- Mostly about academic achievement – letting middle-performing kids enroll in DE

## Advanced Placement

### Summary

- Simply increasing access doesn’t solve the problem; underlying supports and scaffolds must be in place, too (counselors, teachers, networks, parents)
  - These stakeholders must believe that students can succeed in order for the supports to be successful
- Additional programming (workshops, summer programs) might be necessary to prepare students for the coursework
- Importance of culturally responsive PD, instruction, and assessment
- Reducing participation gaps may require changes to assessment/identification procedures (for example, changing AP from opt-in to opt-out)
- Data and surveys can be used to identify students from underserved populations who may benefit from AP
- Parent/family communication is crucial

**Briggs, C., Reis, S.M., & Sullivan, E.E. (2008). A National View of Promising Programs and Practices for Culturally, Linguistically, and Ethnically Diverse Gifted and Talented Students. *Gifted Child Quarterly, 52*(2), 131-145. [https://www.researchgate.net/publication/237969834\\_A\\_National\\_View\\_of\\_Promising\\_Programs\\_and\\_Practices\\_for\\_Culturally\\_Linguistically\\_and\\_Ethnically\\_Diverse\\_Gifted\\_and\\_Talented\\_Students](https://www.researchgate.net/publication/237969834_A_National_View_of_Promising_Programs_and_Practices_for_Culturally_Linguistically_and_Ethnically_Diverse_Gifted_and_Talented_Students)**

- Researched 25 programs to study factors that “contributed to the successful identification and participation of CLED [culturally, linguistically, and ethnically diverse] students in gifted programs”; identified 5 categories:
  - Modified identification procedures, such as the use of different assessment tools or elimination of formal identification procedures
  - Front-loading (“preparing students for advanced content and creative and critical thinking prior to the formal identification process or before advanced-level courses are offered”)
  - Curriculum changes
  - Parent-home connection
  - Program evaluation

**Camizzi, E., Clark, M.A., Goodman, W., & Yacco, S. (2009). Becoming “Difference Makers”: School-University Collaboration to Create, Implement, and Evaluate Data-Driven Counseling Interventions. *Professional School Counseling, 12*(6). <https://doi.org/10.1177/2156759X0901200604>**

- School-university partnership
- Data-based interventions designed to identify high-achieving, low-income students to increase academic rigor (and to help seniors access financial aid)
  - Counselors informed selected students that their academic record showed that they could be successful in advanced classes
  - Counselors also told students that rigorous coursework could help with acceptance to college and success once there

- 45% increase of advanced course enrollment (though a small n)
  - Far greater number of females vs. males
- Not specifically related to AP

**Davis, P., Davis, M.P., & Mobley, J.A. (2013). The School Counselor’s Role in Addressing the Advanced Placement Equity and Excellence Gap for African-American Students. *Professional School Counseling, 17*(1), 32-39. <https://www.jstor.org/stable/10.2307/profschocoun.17.1.32>**

- From the text: This study describes the collaboration of a school counselor and school counselor intern with an Advanced Placement Psychology teacher and a counselor educator to improve African American access to Advanced Placement coursework and increase success on the AP Psychology national examination. The team, in cooperation with school administration, initiated a process that systematically recruited African American students into AP Psychology by identifying African American students with untapped academic potential and supported the students by providing personal-social and academic interventions through an intensive 2-week summer program and weekly group counseling sessions throughout the school year. The support program included group and individual counseling with the dual goal of creating an achievement-minded cohort of African American students and developing the students’ individual identities as scholars.”
- Study found that students in the cohort performed better (though not significantly so) than African-American students not in the cohort
- Also contains qualitative findings and several recommendations

**The Education Trust (2013, June). *Finding America's Missing AP and IB students*. [https://edtrust.org/wp-content/uploads/2013/10/Missing\\_Students.pdf](https://edtrust.org/wp-content/uploads/2013/10/Missing_Students.pdf)**

- Describes how different schools/districts in Equal Opportunity Schools (EOS) approach closing AP/IB gaps
- One district changed AP/IB from “opt-in” to “opt-out” program, automatically enrolling students at a certain level of proficiency
  - Also included additional supports
- One school used survey results to identify students who were under-challenged or felt they weren’t welcome in AP; actively recruiting
- A leader created a new school; “invested heavily in professional development and curricular design in order to create course sequences in each department that would culminate in an AP course in senior year (if not before).”
- Provided steps schools can take (some of which MMSD probably already knows about, like analyzing data, barriers, perceptions)

**Ford, D.Y., Grantham, T.C., & Whiting, G.W. (2008). *Culturally and Linguistically Diverse Students in Gifted Education: Recruitment and Retention Issues*. *Exceptional Children*, 74(3), 289-306. [https://www.researchgate.net/publication/268744447\\_Culturally\\_and\\_Linguistically\\_Diverse\\_Students\\_in\\_Gifted\\_Education\\_Recruitment\\_and\\_Retention\\_Issues](https://www.researchgate.net/publication/268744447_Culturally_and_Linguistically_Diverse_Students_in_Gifted_Education_Recruitment_and_Retention_Issues)**

- Discusses recruitment and retention barriers for gifted education and AP classes
- Includes several recommendations:
  - “Adopt culturally responsive theories and definitions of giftedness”
  - “Identify and serve gifted underachievers”
  - “Adopt culturally sensitive instruments”
  - “Provide gifted education preparation for educators”

- “Provide multicultural preparation for educators”
- “Ongoing evaluation of underrepresentation”

**Hallett, R.E., & Venegas, K.M. (2011). *Is Increased Access Enough? Advanced Placement Courses, Quality, and Success in Low-Income Urban Schools*. *Journal for the Education of the Gifted*, 34(3), 468-487. <https://journals.sagepub.com/doi/pdf/10.1177/016235321103400305>**

- Interviews with students in low-income urban high schools – might be good to show what to avoid in seeking to provide increased access
  - Teachers were not prepared or motivated
  - Lack of guidance from counselors in course selection
  - Scheduling difficulties in tracked schools
  - Budgetary issues
  - Classes too large
  - Feeling like “guinea pigs” for new teachers or programs
- “Increasing access alone will not resolve the inequities experienced by students in many urban educational environments.”

**Judson, E., Bowers, N.L., & Glassmeyer, K. (2019). *Recruiting and Encouraging Students to Complete Advanced Placement Science and Math Courses and Exams: Policies and Practices*. *Journal for the Education of the Gifted*, 42(3), 243-265. <https://journals.sagepub.com/doi/10.1177/0162353219855679>**

- Surveyed AP math and science teachers on goals of AP and strategies used
- Teachers believe that college-level rigor and experience > getting a passing score or improving chances at college admission, though Title I teachers (vs. non-Title I teachers) believe that it promotes college admission chances
- Popular strategy was to waive final exam if student takes AP exam

- Some Title I teachers provided extra credit to students who took the AP exam or dropped maximum course grade if students didn't
- "Recruiting more and more underrepresented students into AP courses is not itself equivalent to equitable access. In concert with parents, teachers, counselors, and administrators must be deliberate about providing the precursor and enrichment experiences that support success in AP and other advanced coursework. Passionate recruitment into AP courses and enthusiastic encouragement to complete AP exams make sense when it is coupled with appropriate preceding educational experiences."

**Kyburg, R.M., Hertberg-Davis, H., & Callahan, C.M. (2007). Advanced Placement and International Baccalaureate Programs: Optimal Learning Environments for Talented Minorities? *Journal of Advanced Academics*, 18(2), 172-215.**  
<https://journals.sagepub.com/doi/pdf/10.4219/jaa-2007-357>

- Qualitative study in 3 urban schools
- Culturally responsive instruction (even though it's not referred to as such):
  - "...educational opportunity tended to be extended to traditionally underserved gifted learners in school environments where AP and IB teachers recognized the diversity and complexity of their students' backgrounds and were cognizant of potential limitations of students who were less prepared to engage in challenging academic study. Teachers with these orientations demonstrated an ability to modify their instructional strategies to accommodate varying learning styles, interests, and levels of preexisting knowledge."
  - "The presence of a cooperative network of support involving administrators, counselors, gifted coordinators, teachers, parents, and students seemed to foster the expectation that all students would succeed given the appropriate external scaffolding and internal motivation."

- "Two key factors were integral to creating environments that nurture the growth of academic talent among students of diverse backgrounds: (a) a pervasive and consistent belief that these students could succeed, which resulted in instructional and group support; and (b) scaffolding to support and challenge able students (e.g., extracurricular help, lunchtime discussion forums, subsidized college visits)."
- Rigid, one-size-fits-all instruction resulted in less success

**Ohrt, J.H., Lambie, G.W., & Ieva, K.P. (2009). Supporting Latino and African-American Students in Advanced Placement Courses: A School Counseling Program's Approach. *Professional School Counseling* 13(1), 59-63.**  
<https://www.jstor.org/stable/42732920>

- Reviewed one school's counseling approach
  - Step 1: Collaboration
  - Step 2: Student Selection
  - Step 3: Student Group Information Sessions
  - Step 4: Delivery of Support Services (individual student planning, mentoring, group counseling, parental/caregiver engagement)
- Latino/African-American enrollment in APs increased by 37% in the subsequent year
- Percentage of students scoring 3 or better on AP tests was similar to the national population

Roegman, R. & Hatch, T. (2016). *The AP Lever for Boosting Access, Success, and Equity*. Kappan Magazine. <https://www.tc.columbia.edu/ncrest/publications--resources/0031721716629653.pdf>

- Study of 4 New Jersey districts with different demographic profiles
- Three strategies identified that increased access:
  - Structural changes in offerings
  - Policy changes in requirements and reporting
  - Educational or PD strategies to increase the quality of teaching and/or advising
- Increased participation without a significant decrease in average student scores
- However, there was a lack of equitable access; Black and Latino participation did not increase much and teachers/counselors still harbored beliefs that Black and Latino students were unprepared for the coursework
  - Strategies didn't focus on disaggregating data, either
  - Researchers also noted a lack of buy-in by schools

