Research on Student Outcomes for Concurrent Enrollment: A Colorado Example

Michael Vente, Director of Research
• Provide historical summary of concurrent enrollment in Colorado
  • Brief history and program transitions over the years

• Overview of current concurrent enrollment participation in Colorado
  • Student demographics, student outcomes, etc.

• Summary of past Colorado analyses into effects of concurrent enrollment

• Summary of IES research into concurrent enrollment

• Findings from other concurrent enrollment research done by Dr. Grant Clayton at the University of Colorado Colorado Springs involving delivery location

• Next steps for Concurrent Enrollment expansion in Colorado
THE COLORADO GOAL
66% ATTAINMENT BY 2025

STRATEGIC GOAL #1
Increase Completion

STRATEGIC GOAL #2
Erase Equity Gaps

STRATEGIC GOAL #3
Improve Student Success

STRATEGIC GOAL #4
Invest in Affordability and Innovation

http://masterplan.highered.colorado.gov/
In 2009, the Colorado General Assembly enacted the Concurrent Enrollment Programs Act which extends the delivery of college-level courses to all eligible students in high schools throughout Colorado instead of just focusing on highly able, college-bound students.

The act merged several dual enrollment programs throughout Colorado and streamlined the funding stream for concurrent enrollment in the state.

- Patchwork of funding methods (including some requiring upfront family payment) to method using state funding sources.

Colorado Revised Statutes 22-35-101
Concurrent Enrollment continues to see sustained increases in participation, up more than 10 percent statewide with 28,290 students participating in 2016-2017.

Statewide, 96 percent of school districts and 86 percent of high schools offer Concurrent Enrollment programs.

Concurrent Enrollment participation is up amongst student who identify as:
- Asian (16 percent)
- African American (8 percent)
- Hawaiian or Pacific Islander (8 percent)
- Hispanic (21 percent)
- White (6 percent)
- More than one race (12 percent)

• In 2016-2017, high school students attempted a total of 242,728 Concurrent Enrollment credit hours. The average number of credit hours attempted per student was 8.6 with an average of 8 hours passed.

• A large majority of the Concurrent Enrollment hours taken by students—94 percent—was passed in 2016-2017.

• Through Concurrent Enrollment or ASCENT programs, 2,017 students earned some type of postsecondary credential in 2016-2017 while still in high school.
Dual enrollment increasing statewide

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Unduplicated Student Count Academic Year 2014-2015</th>
<th>Unduplicated Student Count Academic Year 2015-2016</th>
<th>Unduplicated Student Count Academic Year 2016-2017</th>
<th>Change from 2015-2016 to 2016-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concurrent Enrollment two- &amp; four-year institutions*</td>
<td>23,127</td>
<td>25,534</td>
<td>28,290</td>
<td>+10.8%</td>
</tr>
<tr>
<td>Two-year institutions</td>
<td>20,878</td>
<td>22,582</td>
<td>25,127</td>
<td>+11.3%</td>
</tr>
<tr>
<td>Four-year institutions</td>
<td>2,645</td>
<td>3,599</td>
<td>3,782</td>
<td>+5.1%</td>
</tr>
<tr>
<td>Area Technical Colleges (ATCs)**</td>
<td>883</td>
<td>946</td>
<td>927</td>
<td>-2.0%</td>
</tr>
<tr>
<td>ASCENT Program***</td>
<td>462</td>
<td>485</td>
<td>463</td>
<td>-4.5%</td>
</tr>
<tr>
<td>Other High School Dual Enrollment Programs</td>
<td>11,241</td>
<td>11,554</td>
<td>12,177</td>
<td>+5.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>35,713</td>
<td>38,519</td>
<td>41,857</td>
<td>+8.7%</td>
</tr>
</tbody>
</table>
Concurrent Enrollment continues to grow

- In 2016-17, 28 public institutions of higher education had an estimated 230 cooperative agreements in place with local education providers using the Concurrent Enrollment model.

- A total of 3 BOCES and 174 school districts participated in Concurrent Enrollment in 2016-17, which represents about 96 percent of districts in Colorado and 86 percent of high schools.

- Nearly 44 percent of students who participated in ASCENT in 2016-2017 were Hispanic, a minority group that is historically underrepresented in postsecondary education. One of the goals of the ASCENT program is to increase the percentage of traditionally underserved students who participate in postsecondary education.
Challenges to Concurrent Enrollment

• Data and terminology discrepancies between the various types of dual enrollment in Colorado;

• Newly clarified Higher Learning Commission (HLC) teacher-preparation guidelines that impact the ability of rural communities to find teachers with the necessary credentials to teach college-level courses;

• Funding constraints, especially in rural areas, that limit the ability of districts to offer various options for students to earn college credit while in high school;

• Focus on other forms of postsecondary credit opportunities for high school students, such as Advanced Placement;

• Limitations on the availability of Concurrent Enrollment courses due to service-area restrictions with institutions of higher education; and,

• A lack of streamlined paperwork and processes when working with institutions of higher education that offer Concurrent Enrollment.
## Concurrent Enrollment demographics

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>2015-2016 Academic Year</th>
<th>2016-2017 Academic Year</th>
<th>Percentage Change in Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number/Percentage</td>
<td>Number/Percentage</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>774/3%</td>
<td>897/3%</td>
<td>+16%</td>
</tr>
<tr>
<td>African American</td>
<td>794/3%</td>
<td>861/3%</td>
<td>+8%</td>
</tr>
<tr>
<td>Hawaiian or Pacific Islander</td>
<td>64/0.2%</td>
<td>69/0.2%</td>
<td>+8%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>5,715/22%</td>
<td>6,934/24%</td>
<td>+21%</td>
</tr>
<tr>
<td>Native American/Alaskan Native</td>
<td>152/1%</td>
<td>145/1%</td>
<td>-5%</td>
</tr>
<tr>
<td>Unknown/Did Not Wish to Answer</td>
<td>2,528/10%</td>
<td>2,882/10%</td>
<td>+14%</td>
</tr>
<tr>
<td>White</td>
<td>14,436/56%</td>
<td>15,294/53%</td>
<td>+6%</td>
</tr>
<tr>
<td>More Than One Race/Ethnicity</td>
<td>939/4%</td>
<td>1,053/4%</td>
<td>+12%</td>
</tr>
<tr>
<td>Nonresident Alien*</td>
<td>401/2%</td>
<td>551/2%</td>
<td>+37%</td>
</tr>
</tbody>
</table>
Concurrent Enrollment trend data by race/ethnicity (count)
Concurrent Enrollment trend data by race/ethnicity (percent of total)
Through Concurrent Enrollment or ASCENT programs, 2,017 students earned some type of postsecondary credential in 2016-2017 while still in high school. This is a 35 percent increase over last year’s total credential-completion number of 1,491.

<table>
<thead>
<tr>
<th>Credential Type</th>
<th>Total Students, 2016-2017</th>
<th>Total Students, 2015-2016</th>
<th>Change from previous year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate (less than 1 year)</td>
<td>1,640</td>
<td>1,159</td>
<td>+481</td>
</tr>
<tr>
<td>Certificate (at least 1 year, less than 2)</td>
<td>79</td>
<td>55</td>
<td>+24</td>
</tr>
<tr>
<td>Associate of Applied Science</td>
<td>16</td>
<td>16</td>
<td>-</td>
</tr>
<tr>
<td>Associate of General Studies</td>
<td>53</td>
<td>35</td>
<td>+18</td>
</tr>
<tr>
<td>Associate Degree (AA or AS)</td>
<td>227</td>
<td>226</td>
<td>+1</td>
</tr>
<tr>
<td>Bachelor’s Degree (BA or BS)*</td>
<td>1</td>
<td>-</td>
<td>+1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,017</strong></td>
<td><strong>1,491</strong></td>
<td><strong>+526</strong></td>
</tr>
</tbody>
</table>
Previous Colorado research

A 2014 study using Colorado data shows better outcomes on all indicators for dual enrollment students as compared to students who did not take dual enrollment courses. Participation in Concurrent Enrollment is associated with:

- An increased likelihood of enrolling in college after high school (23 percentage points higher)
- A decreased need for remediation (11 percentage points lower)
- Higher earned cumulative credit hours by the end of their first year (9 more credit hours)
- Higher first-year grade point averages (0.15 GPA higher)
- Higher first-year retention rates (3 percentage points higher)

Sources:
Colorado Department of Higher Education Policy Brief on Concurrent and Dual Enrollment
Research Projects

High Concurrent Enrollment participation best practices in districts

Concurrent Enrollment delivery location study by researcher at University of Colorado Colorado Springs (UCCS)

Institute of Education Sciences (IES) grant to assess a return on investment on Concurrent Enrollment participation
The Outcomes and Return on Investment of Concurrent Enrollment in Colorado: A Researcher-Practitioner Partnership to Improve Postsecondary Access and Success

Principal Investigators:

- Colorado Department of Higher Education – Education agency
  - Kim Poast, Ph.D. (PI)

- CU Boulder – Research institution
  - Pamela Buckley, Ph.D. (PI)

- Augenblick, Palaich and Associates (APA) Consulting
  - Robert Reichardt, Ph.D.

- National Center for Higher Education Management Systems (NCHEMS)
  - Rachel Christenson

- University of Denver
  - Kristin Klopfenstein, Ph.D.
Institute of Education Sciences (IES)

• IES is the independent, non-partisan statistics, research, and evaluation arm of the U.S. Department of Education

• Goals include:
  • Advance the relevance of research and usability of findings for practitioners and policymakers.
  • Increase the capacity of policymakers and practitioners to use knowledge generated from high quality data analysis, research and evaluation.

• Legislative mission:
  1. Describe the condition and progress of education in the US
  2. Identify education practices that improve academic achievement and access to education opportunities
  3. Evaluate the effectiveness of Federal and other education programs
Researcher-Practitioner Partnerships in Education Research

Supports partnerships composed of research institutions and state or local education agencies that have identified an education issue with important implications for improving student education outcomes.

Must:

1) Describe the partnership and education issue addressed by the partners
2) Present results of a completed initial research project
3) Make a plan for the partnership’s future research
4) Provide lessons learned for others in forming such partnerships
Purpose of Colorado’s IES Grant

1) Build capacity of key stakeholders in evaluating policies for increasing college attainment

2) Develop a state-level research agenda that supports expanded access to higher education, degree or credential attainment, and that reduces equity gaps in Colorado

3) Launch this agenda by studying all types of dual enrollment, where secondary students receive both high school and college credit for the same course work
IES Study Overview

A quantitative study examining the relationship between dual enrollment in Colorado and college outcomes (persistence and completion), led by CU Boulder with support from University of Denver.

A case study of cost estimates of implementing Concurrent Enrollment, led by APA Consulting.

The first two components will be combined to create a dual enrollment “Return on Investment” (ROI) estimate, led by NCHEMS.
Research Questions

**Cost Study**
- What are the costs of the Concurrent Enrollment program to school districts and institutes of higher education participating in the program?
- What are the sources of revenue used to pay for these costs including state, district, institutional, and individual student (or family) funds?
- Can those costs and sources of revenue be extrapolated to the entire state?
- Case study at 7 sites: DPS, APS, Delta, Salida, CCD, CCA, Western

**Quantitative Study**
- Is participation in any type of dual enrollment related to student success in college, as measured by accumulated college credits one-year post expected date of high school graduation?
- Do the relationships between participation in dual enrollment and accumulated college credits one-year after expected date of high school graduation vary for students from different backgrounds?
- Are these relationships stronger for students from low-income families?
- Are these relationships stronger for minority students?

**Returns Study**
- Is participation in dual enrollment related to students’ access to and success in college?
- Are students who earn dual enrollment credit more likely to enroll in college immediately (within a year of graduating high school) than students who do not earn dual enrollment credit?
- Are students who earn dual enrollment credit and enroll in college immediately more likely to:
  - Persist from the fall-to-fall?
  - Earn a certificate?
  - Earn an Associate’s degree?
  - Earn a Bachelor’s degree?
- What is the return on dual enrollment for students, districts, institutes of higher education, and the state?
Differences in Concurrent Enrollment GPA Outcomes Based on Course Delivery Format

Grant Clayton, Assistant Professor University of Colorado-Colorado Springs
Research Questions

• **Does the delivery method – on a high school campus vs at a postsecondary institution of concurrent enrollment courses – have a differential effect on later student outcomes.**

• **The key dependent variables are:**
  – likelihood to re-enroll at the same institution (pipeline)
  – likelihood to enroll at another IHE (2 and 4 year)
  – persistence to both the second and third semesters
  – initial number of credits earned
  – initial GPA (at first and second semesters)
Theory

- We might expect differences based on going to college
- Differences between community college faculty and HS teachers who qualify
Concurrent Enrollment Course Format Possibilities

• High school with high school teachers (HS only)
• Community college with community college faculty (CC Campus)
• Online (Reference)
• Mix of two or more (Combo)
<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS Only</td>
<td>68.86%</td>
</tr>
<tr>
<td>CC Campus</td>
<td>14.91%</td>
</tr>
<tr>
<td>Combo</td>
<td>14.41%</td>
</tr>
<tr>
<td>Online Only Only</td>
<td>1.05%</td>
</tr>
<tr>
<td>Courses</td>
<td>Percentage</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>English</td>
<td>18.64%</td>
</tr>
<tr>
<td>History</td>
<td>15.47%</td>
</tr>
<tr>
<td>Math</td>
<td>11.55%</td>
</tr>
<tr>
<td>Science</td>
<td>8.98%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>54.63%</strong></td>
</tr>
</tbody>
</table>
High School Outcomes by Race/Ethnicity

- When comparing the outcomes for Concurrent Enrollment students during their final year of high school on the final term GPA, cumulative GPA, and cumulative credit hours, the only statistically significant difference was a final term GPA
  - 0.21 greater for Asian students relative to their White Concurrent Enrollment peers.
  - Fairly similar outcomes regardless of race/ethnicity
Postsecondary Outcomes by Race/Ethnicity

- **Enrollment in postsecondary**
  - African American (+8%), Hispanic (+3%), and Asian (+5%) students were more likely to be enrolled than their White peers at a four-year institution by the end of the fall term after graduation.
  - African American and Asian students were both 3% less likely to be enrolled at two-year institutions (compared to White).

- **For first term in higher education GPA:**
  - African American students showed term a GPA 0.24 lower than their White peers.
  - Hispanic students had a term GPA of 0.11 lower than their White peers.
  - Students identifying as multi-racial had a term GPA of 0.11 lower than their White peers.
  - Differences for Native American and Asian students were not statistically significant for term GPA.

- **Number of credit hours earned in the first term**
  - African American students accumulated 2.35 less than their White peers.
  - For all other student groups the differences were not statistically significant.
Outcomes based on delivery location

• For Concurrent Enrollment students during their final year of high school there were no statistically significant differences for the final term GPA or cumulative GPA based on location.

• Cumulative credit hours
  – High school only and community college only are completing credit hours at the same rate
Outcomes based on urbanicity

- **First year in higher educations outcomes of term GPA and cumulative credit hours**
  - Only statistically significant differences were rural students showing a lower first term GPA of 0.20 relative to suburban.
  - And urban students accumulating 3.25 hours less than suburban.
  - In all other cases the interaction of delivery location and geography was not statistically significant between groups.
Summary

• Race/ethnicity (similar outcomes for all CE students regardless of race/ethnicity)

• Delivery location (no/little difference)

• Rural vs. urban vs. suburban (little difference in outcomes based on geographic location)
Guiding Principles of Concurrent Enrollment

To help the state reach its goals, Colorado’s Concurrent Enrollment infrastructure should strive to:

• Provide meaningful college exposure
• Offer college courses that are transferable and applicable to programs of study at Colorado institutions of higher education
• Accelerate time to degree and offer opportunities for students to receive credentials in high school
• Provide students with access to both CTE and general education pathways
• Ensure Concurrent Enrollment courses offer the same level of quality as other postsecondary courses
Solutions for Improving Concurrent Enrollment

• Brand and differentiate the state Concurrent Enrollment program from other similar programs to reduce confusion for families and students
• Leverage Open Education Resources and similar approaches to minimize costs to families
• Streamline the administrative processes for institutions and districts adopting Concurrent Enrollment
• Provide opportunities for high school teachers to earn the necessary qualifications to teach Concurrent Enrollment courses, particularly in rural areas
• Create greater access to Concurrent Enrollment via diverse delivery models
• Give school districts more options in establishing cooperative agreements with postsecondary institutions
• Communicate clearly how Concurrent Enrollment impacts a student’s college record and financial aid status
• Make it clear to students how credits are applicable to a degree of study
• Provide opportunities to receive stackable credentials in high school
Questions

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