CTE Programs in Magnet High Schools: Bridging Researcher and District Perspectives

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Researchers’ Needs

- Clean data!
  - Data from far-flung corners brought together and de-identified
  - Some systems don’t talk to each other
- Timely data!
  - Why don’t they drop everything to help us?
- Uncomfortable questions
  - When schools go rogue (i.e., teaching cancelled courses which we discover by asking district-level staff about it)
Districts’ Needs

- Clear, easy to access results
- External feedback on success of POS
- Implications and recommendations
Why CCSD Created Career and Technical Academies

- Build on successful existing CTE programs
- Create smaller learning communities
- Provide CTE programs to a larger community
- Improve student graduation rates
- Address local workforce needs
Have the CCSD CTAs Been Successful?

- Seven academies are full with growing waitlists. (9,300 students)
- All are classified as 5-Star schools (highest district rating)
  - State proficiency scores
  - AP Dual Credit/Tech Prep Credit
  - Academic Growth Scores
  - School Climate Factors
  - Graduation Rates
- Numerous state and national leadership awards
Do the CCSD Career and Technical Academies Enhance Innovation?

- All instruction centered on Project Based Learning strategies
- First National Academy Foundation Pre-engineering program
- Full use of technology both inside and outside of classrooms
- All students expected to have a community based experience
  - Internship  Work Experience  Community Service
Clark County School District
Treatment Schools

- Advanced Technologies Academy - 1,000 students
  - Wall-to-wall tech-focused academies (e.g., computer science, business, legal studies)
- Southeast Career and Technical Academy – 1,800
  - Former career center with upgraded academics (e.g., construction, graphic design, automotive, cosmetology)
- Northwest Career and Technical Academy – 2,000
  - Specially designed facility with PBL focus (e.g., pre-engineering, hospitality, Medical, culinary)
School Performance Framework

School Criteria for Star Rating System
5-Star = highest performance, 1-Star = lowest performance

- Graduation rate
- Career and College Readiness Factors
- Academic Growth
- Adequate Yearly Progress (AYP)
- Climate Factors

- All three treatment schools received the highest district rating: 5 stars
Research Questions

- To what extent does POS participation increase student:
  - academic achievement?
  - technical skills achievement?
  - high school completion?
  - employability?
  - completion of coursework leading to college credits?

- How do POS differ from the traditional high school experience at the schools that the comparison group students attend?
Method

• Quantitative analyses
  • Anonymized systems data collected from district
  • $T$ tests, chi-squares, ANCOVA to date
  • Future: posthoc analyses by program, by at-risk student

• Qualitative analyses
  • Whether the programs are or are not POS based on interviews and course sequence analysis
  • Presence/absence of 10 components of Perkins policy guidance
  • Other themes from coding/data reduction (i.e., school culture, student lived experience)
West District 10th Grade Test Scores

POS Schools
Control Group

<table>
<thead>
<tr>
<th>Subject</th>
<th>POS Schools</th>
<th>Control Group</th>
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</thead>
<tbody>
<tr>
<td>Reading</td>
<td>329.27</td>
<td>325.26</td>
</tr>
<tr>
<td>Math</td>
<td>303.10</td>
<td>291.42</td>
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<tr>
<td>Science</td>
<td>333.10</td>
<td>328.45</td>
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West District Credits Earned

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<thead>
<tr>
<th>Subject</th>
<th>POS</th>
<th>Control</th>
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</thead>
<tbody>
<tr>
<td>AP</td>
<td>1.68</td>
<td>2.05</td>
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<tr>
<td>Math</td>
<td>3.91</td>
<td>4.03</td>
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<tr>
<td>Science</td>
<td>3.80</td>
<td>3.78</td>
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<tr>
<td>Career</td>
<td>5.11</td>
<td>3.63</td>
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West District Cumulative GPAs

<table>
<thead>
<tr>
<th></th>
<th>POS</th>
<th>Control</th>
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<tbody>
<tr>
<td>Overall</td>
<td>3.31</td>
<td>3.33</td>
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<tr>
<td>Academic</td>
<td>3.19</td>
<td>3.21</td>
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<tr>
<td>Career</td>
<td>3.32</td>
<td>3.36</td>
</tr>
<tr>
<td>Postsec</td>
<td>3.34</td>
<td>3.17</td>
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</table>
Graduation Rates

90.2

CTAs/POS

86.5

Control
# Summary of Results

<table>
<thead>
<tr>
<th>Measure</th>
<th>Favors CTAs?</th>
<th>Effect size Hedges’s $g$</th>
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</thead>
<tbody>
<tr>
<td>10th grade reading exam</td>
<td>↑</td>
<td>0.09</td>
</tr>
<tr>
<td>10th grade math exam</td>
<td>↑</td>
<td>0.11</td>
</tr>
<tr>
<td>10th grade science exam</td>
<td>↑</td>
<td>0.10</td>
</tr>
<tr>
<td>AP credits earned</td>
<td>↓</td>
<td>-0.16</td>
</tr>
<tr>
<td>Math credits earned</td>
<td>↓</td>
<td>-0.14</td>
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<tr>
<td>Science credits earned</td>
<td>↔</td>
<td>0.03</td>
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<tr>
<td>Career credits earned</td>
<td>↑</td>
<td>0.49</td>
</tr>
<tr>
<td>Overall GPA</td>
<td>↔</td>
<td>-0.03</td>
</tr>
<tr>
<td>Academic GPA</td>
<td>↔</td>
<td>-0.04</td>
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<tr>
<td>Career GPA</td>
<td>↔</td>
<td>0.07</td>
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<tr>
<td>Postsecondary GPA</td>
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<td>0.16</td>
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<tr>
<td>Graduation rate</td>
<td>↑</td>
<td>1.43 (OR)</td>
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Notes on Effect Sizes (ES)

- ES let you know whether the differences in outcomes are educationally meaningful. Positive ES favor the POS.
- For 10th grade tests, none of the ES meet the ±0.25 threshold, which makes sense because some POS don’t start until 10th grade.
- No GPA ES meets the threshold either but POS students have lower CTE GPAs. This may be because they are taking a progressively more challenging CTE curriculum while the comparison students can take all intro courses in several areas.
More Notes on ES

- We found ES well above +0.25 for ‘career credits earned.’ It’s not surprising to learn that POS students earned more career credits than their nonPOS counterparts.

- Other credit categories showed few educationally meaningful differences between the groups. This is good news: it means that POS can be provided without harming student academic performance.

- Graduation rate ES are calculated differently, but that finding is also not educationally meaningful. Again this means POS is a value-added experience.
Comparing District Results with Study Results

- The district data are results for each school individually.
- The study data combine the 3 treatment schools’ results, and compare them to those of a specific set of students who could be attending any high school in the district (i.e., those not selected by lottery).
- Not the most immediately useful comparison for any district trying to use data to improve practice.
Recommendations

• Have relevant district personnel involved from the start—they may have research questions that can be added on.
• District personnel and research team could collaborate to analyze results.
• Research team should provide yearly updates.
• Research team could put on workshops with findings to date and how they were computed.
• Must be in research budget and schedule.
Policy Implications

- CTA model effective in raising student academic achievement
- Blueprint of Federal re-authorization of Perkins Act highlights many of these schools successes:
  - High academic standards
  - Community partnerships
  - Postsecondary articulation
- District received a 2013 federal Innovation Grant based on these schools’ successes focusing on STEM.
- Local industry partners support community schools
- 5-10 schools visit CCSD annually to study CTAs.
Contact Us

Report to be on the web by Summer 2013:

http://www.nrccte.org

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