Career and Technical Education Course Taking Patterns of High School Graduates: Exploring the Participation in the Most Frequent Sets of Occupational Areas

Oscar A. Aliaga
Pradeep Kotamraju
Emily R. Dickinson

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SYNOPSIS OF SCENES

ACT I. — The group of non-CTE concentrators

ACT II. — A Typology to understand the high school CTE experience

ACT III. — Non-concentrators and most frequent occupational combinations
Act I.—The group of non-CTE concentrators
Purpose

• Participation in CTE
• We know who the “concentrators” are
• We also know who the “academic” are
• What about those not making the classification?
  – Who are they?
  – What type of CTE experience are they building?
  – No research focused in this group
Let’s take a look

<table>
<thead>
<tr>
<th>Grade</th>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
<th>Student 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>10&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Food tech I</td>
<td>Horticulture</td>
<td>Introduction to computers</td>
<td>Word processing</td>
</tr>
<tr>
<td>11&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Marketing I</td>
<td>Business management</td>
<td>CAD I</td>
<td>Accounting I</td>
</tr>
<tr>
<td>12&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Marketing II</td>
<td>Marketing I</td>
<td>CAD II</td>
<td>Accounting II</td>
</tr>
<tr>
<td>Traditional Descriptor</td>
<td>Experimenter</td>
<td>Experimenter</td>
<td>Experimenter</td>
<td>Concentrator</td>
</tr>
</tbody>
</table>
Why this group?

• Not received much attention from research or policy-makers
• Uncertainty about their intents, interests, and goals
• Similarities with “CTE concentrators”
• Often used for comparison with both the “academic” and CTE “concentrators”
Two issues

• Do they acquire any skills at all by not focusing on an area?
  – for work?
  – for postsecondary education?

• Or are they articulating a set of skills that is more meaningful for them—their intents, interests, goals?
• Act II.—A Typology to understand the high school CTE experience
Common perspective about participation in CTE
But CTE is not what it used to be ...

• Graduation requirements
• Participation patterns
• Occupations expansion
  – Variations within each occupation
  – Career pathways and clusters
Current Graduation Requirements and CTE

Academic Credits and Graduation Requirements of States

Mean 12.2

States
Current Participation Levels in CTE

• 92% of public high school students take one course in CTE (class of 2005)
  – Consistent for past 15 years

• 4.01: Average number of CTE credits earned by all public high school graduates (2005)
Occupational areas

• Few occupational areas at the turn of the century

• Data prior to 2005
  – 10 OA
  – 18 disaggregated

• Data after 2005
  – 11 OA
  – 20 disaggregated
Therefore, a student’s High School experience may look like this instead:

**STANDARD CREDIT REQUIREMENTS**
(4E, 3M, 3S, 3SS)
(NCES-HSTS 2011)

- **HIGH LEVEL MATH AND SCIENCE**
  (4E, 3M, 3S, 3SS, 1FL; Geom & Alg I or II or higher, 2 Bio, Che, Phys)

- **CTE COURSE TAKING**
  (UP TO LESS THAN 3 CREDITS) OR HIGH INTENSITY CTE (3 OR MORE CR, NOT FULFILLING OR FULFILLING AN OCCUPATIONAL AREA)
NRCCTE Typology

• Looks at the whole spectrum of CTE credit taking

• Based on 0, 1 and 3 credits (8 basic categories)

• Different levels: respond to different intents, interests, and plans
• **Act III.**—Non-concentrators and most frequent occupational combinations
CTE and ELS: 2002

• Self-reporting data (survey)

• Transcript data (restricted data)
  – Academic courses
  – CTE courses
  – Thirteen occupational areas

• Representative sample of students in 10th grade in 2002
A Note about National Databases

• Rich sources of information
• Extremely useful for educational research

• Comprehensive samples
  – Specificity and complexity of CTE
Typology of CTE Credit Taking

Typology of CTE Credit Taking (Percentages)

Zero cr: 8
One cr: 7.5
Three cr: 10.7

29.9 cr: Focus on Occ Area
19.6 cr: Not Focus on Occ Area
16 cr: Focus on Occ Area
0.8 cr: Not Focus on Occ Area
Typology: Four Basic Categories

NRCCTE Typology: Four Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero CTE credits</td>
<td>8</td>
</tr>
<tr>
<td>More than zero, less than 3 CTE credits</td>
<td>48.1</td>
</tr>
<tr>
<td>3 or more CTE credits, no focus on an occupational area</td>
<td>27.2</td>
</tr>
<tr>
<td>3 or more CTE credits, focus on one or more occupational areas</td>
<td>16.8</td>
</tr>
</tbody>
</table>
Guiding research questions

• For the group that takes **3 or more CTE credits and does not focus** on any occupation

• **What sets of occupational areas are chosen?**

• **What is the relationship between those patterns and postsecondary education?**
## Demographics

<table>
<thead>
<tr>
<th></th>
<th>Zero CTE Credits</th>
<th>More than Zero but less than 3 CTE Credits</th>
<th>3 or More CTE Credits, no Occupational Area</th>
<th>3 or More CTE Credits, One or More Occupational Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Female</strong></td>
<td>57.6</td>
<td>53.5</td>
<td>48.9</td>
<td>44.7</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>42.4</td>
<td>46.5</td>
<td>51.1</td>
<td>55.3</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>61.2</td>
<td>54.2</td>
<td>58.9</td>
<td>63.1</td>
</tr>
<tr>
<td><strong>Black</strong></td>
<td>13.7</td>
<td>13.4</td>
<td>12.4</td>
<td>14.6</td>
</tr>
<tr>
<td><strong>Hispanic</strong></td>
<td>14.6</td>
<td>16.4</td>
<td>14.2</td>
<td>11.5</td>
</tr>
<tr>
<td><strong>Asian</strong></td>
<td>5.7</td>
<td>5.5</td>
<td>3.0</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>4.8</td>
<td>10.6</td>
<td>11.5</td>
<td>8.5</td>
</tr>
<tr>
<td><strong>SES-Q1 (Low)</strong></td>
<td>17.5</td>
<td>22.3</td>
<td>24.8</td>
<td>28.9</td>
</tr>
<tr>
<td><strong>SES-Q2</strong></td>
<td>18.1</td>
<td>23.4</td>
<td>28.9</td>
<td>29.6</td>
</tr>
<tr>
<td><strong>SES-Q3</strong></td>
<td>28.3</td>
<td>25.7</td>
<td>26.6</td>
<td>25.0</td>
</tr>
<tr>
<td><strong>SES-Q4 (High)</strong></td>
<td>36.1</td>
<td>28.6</td>
<td>19.7</td>
<td>16.5</td>
</tr>
</tbody>
</table>
CTE Categories and HS GPA—Distribution

- No CTE credits
- More than 0 but less than 3 CTE credits
- 3 or more CTE credits, No Occupational Area
- 3 or more CTE credits, One or more Occupational Areas
## CTE and HS Achievement

<table>
<thead>
<tr>
<th></th>
<th>No CTE credits</th>
<th>More than 0 but less than 3 CTE credits</th>
<th>3 or more CTE credits, No Occupational Area</th>
<th>3 or more CTE credits, One or more Occupational Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPA Mean</td>
<td>2.91</td>
<td>2.78</td>
<td>2.74</td>
<td>2.69</td>
</tr>
<tr>
<td>Basic Math</td>
<td>3.98%</td>
<td>2.67%</td>
<td>2.28%</td>
<td>5.80%</td>
</tr>
<tr>
<td>Algebra 2</td>
<td>36.05</td>
<td>43.44</td>
<td>51.89</td>
<td>58.82</td>
</tr>
<tr>
<td>Beyond Algebra 2</td>
<td>59.97</td>
<td>53.90</td>
<td>45.83</td>
<td>35.38</td>
</tr>
<tr>
<td>Basic Science</td>
<td>2.60%</td>
<td>1.48%</td>
<td>1.19%</td>
<td>3.50%</td>
</tr>
<tr>
<td>Biology</td>
<td>44.78</td>
<td>52.23</td>
<td>59.75</td>
<td>60.46</td>
</tr>
<tr>
<td>Biology or higher or equivalent</td>
<td>52.62</td>
<td>46.30</td>
<td>39.06</td>
<td>36.04</td>
</tr>
</tbody>
</table>
Almost there

• Why to come to this point—and not focusing?

• What is the value?

• Recap:
  – 3 or more CTE credits (minimum to acquire skills)
  – On an occupational area
Most frequent sets of occupation combinations
### CTE Non-Concentrators and Postsecondary

<table>
<thead>
<tr>
<th>CTE Sets of Occupational Area Combinations</th>
<th>Less than 2-yr</th>
<th>2-yr College</th>
<th>4-yr College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Management, Computer Science, Consumer Services</td>
<td>32.4%</td>
<td>30.1%</td>
<td>37.5%</td>
</tr>
<tr>
<td>Business Management, Communication, Consumer Services</td>
<td>27.5%</td>
<td>32.7%</td>
<td>39.8%</td>
</tr>
<tr>
<td>Business Management, Communication, Computer Science, Consumer Services</td>
<td>25.2%</td>
<td>33.3%</td>
<td>41.4%</td>
</tr>
<tr>
<td>Communication, Computer Science, Consumer Services</td>
<td>25.7%</td>
<td>31.5%</td>
<td>42.8%</td>
</tr>
<tr>
<td>Business Management, Communication, Computer Science</td>
<td>14.8%</td>
<td>29.6%</td>
<td>55.6%</td>
</tr>
<tr>
<td>Business Management, Consumer Services</td>
<td>31.9%</td>
<td>28.8%</td>
<td>39.2%</td>
</tr>
<tr>
<td>Computer Science, Consumer Services</td>
<td>32.5%</td>
<td>34.5%</td>
<td>33.0%</td>
</tr>
<tr>
<td>Business Finance, Business Management, Computer Science, Consumer Services</td>
<td>24.0%</td>
<td>23.1%</td>
<td>52.9%</td>
</tr>
<tr>
<td>Other CTE course-taking patterns</td>
<td>28.1%</td>
<td>28.4%</td>
<td>43.5%</td>
</tr>
</tbody>
</table>
Correspondence

Oscar A. Aliaga, PhD
oscar.aliaga@louisville.edu