If Programs of Study are the Answer, What is the Problem?

Early Lessons from 3 Field Based Studies
## The College & Career Challenge

<table>
<thead>
<tr>
<th>9th Grade Cohort</th>
<th>Benchmarks</th>
<th>Workforce Credentials</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 enter 9th grade*</td>
<td>70% complete HS¹</td>
<td>30% enter as HS drop outs</td>
</tr>
<tr>
<td>70 complete HS</td>
<td>62% start college immediately²</td>
<td>25% enter as HS grad</td>
</tr>
<tr>
<td>43 Start college</td>
<td>47% drop out (31% with 0 credits)</td>
<td>19% enter with some college &amp; a lot of debt</td>
</tr>
<tr>
<td></td>
<td>57% complete within 6 years³</td>
<td>18-24% enter with college degree (6/4;3/2)</td>
</tr>
</tbody>
</table>

*An unknown number of pre-9th graders never make it to high school

1. Greene et al, 2006
3. NCES, 2010
What are the real school problems?

- A high and rising drop out rate
- Students who graduate are lacking in basic math and science skills
- Most students think they are going to college but do not prepare for it or any other possible future
To address these and other issues...
The NRC: Four Plans of Work

- Scientifically Based Research
- Tech Assistance
- Professional Development
- Dissemination
POS – The law

- Incorporate secondary education and postsecondary education elements;

- Coherent and rigorous content in a coordinated, non-duplicative progression of courses that align secondary education with postsecondary education... to adequately prepare students to succeed in postsecondary education;

- May include dual or concurrent enrollment programs;

- Lead to an industry-recognized credential or certificate at the postsecondary level, or an associate or baccalaureate degree.
Current thinking: POS Components

- Legislation and Policies
- Partnerships among Education, Business, and Other Community Stakeholders
- Sustainable Leadership and Shared Planning
- Rigorous Academic and Technical Standards Aligned with Curriculum and Assessments
- Aligned Secondary and Postsecondary Education Elements
- Credit Transfer Agreements
- Accountability and Evaluation Criteria
- Guidance, Counseling and Advisement
- Professional development
- Innovative Teaching and Learning Strategies
Ghosts of Past Reforms . . .

School to Work 1994-2001

Career Education 1970-1980

Youth Apprenticeship 1980s

Tech Prep 1990-?
NRC Research Agenda: POS
TO AVOID THE GHOSTS OF REFORM PAST...
The NRCCTE POS Research Agenda

- 3 rigorous, longitudinal studies to examine various elements of POS
- A Cross-Site Study examining 3 exemplary sites from the rigorous studies to determine common attributes and elements that make programs work
  - The 10 elements developed by OVAE and others used as interview/observation framework
- A qualitative study to examine development and technical assistance in 6 states (not reported here)
Rigorous, Longitudinal POS Studies: Mixed Method Studies*

- A longitudinal study of three cohorts in SC (6th, 9th, 11th graders) in three diverse WIAs
- A backward mapping (from CC) study of three sites with 15 years of history of POS-like programs
- A random assignment or propensity match study in five sites

* Systems Data (transcript) & Interview, Survey Data
Caveats

These are longitudinal studies
Data collection lags actual events
Early findings will point toward proximal variables
  • Progress toward graduation
  • Behaviors
  • Self-efficacy
  • Academic & Technical Achievement
Evidence on distal variables 5+ years(?)
A Longitudinal Study of the South Carolina Personal Pathways to Success Initiative

Clemson University
Sam Drew & Cathy Hammond
Purpose of Study

• To examine the influence of South Carolina’s Education and Economic Development Act (EEDA) on the development of programs of study (POS) and student outcomes
• EEDA contains nearly all of the basic and supporting components identified by OVAE for the successful development of a Perkins IV funded POS – but is aimed at all students
• SC passed EEDA one year prior to Perkins IV
• Our study is looking at early implementation and outcomes
• The Class of 2011 is the first cohort fully exposed to law from 8th grade through 12th grade
Sources of Major Guidance-Specific Data for this Analysis

- POS/Engagement survey:
  - Class of 2011 as 10th graders
- Phone interview of guidance personnel
- Two site visits (focus groups of administration, guidance, teachers -- CTE and non-CTE)
- School Counselor Duties Survey
- Guidance Personnel Accountability Report
### Preliminary Findings on Changes in School Counselor Duties

- **Engagement in career-focused activities**
  - Counselors report engaging in more career-focused guidance activities as a result of the reform policy.
  - The IGP process has increased one-on-one interactions (both counselor- and student-initiated) between students and counselors – mainly centered around careers and courses.
  - Most 10th graders report at least some involvement in career-focused activities/planning with counselors.
  - There are inconsistent reports regarding levels of parental involvement with the process.
Preliminary Findings on Changes in School Counselor Duties

• Results of changes in duties
  – With increased career-focused activities come increased workloads
  – Counselors report still being involved in “inappropriate activities” as defined by ASCA
  – Counselors report not being able to provide some ASCA sanctioned services, particularly some personal/social programs/services
Preliminary Findings on Changes in School Counselor Duties/Workloads

• Reported reasons for increased workloads
  – The IGP development and review process was reported to be a central factor in increased duties/workloads
  – Career specialists are supposed to help carry the loads but their contributions are restricted by EEDA guidelines
Counselor Preparedness and the Role of the IGP in Increasing Awareness

- Despite challenges, counselors report feeling prepared to carry out new duties.
- The IGP process has increased counselor awareness and knowledge of CTE and dissemination of that information.
In Future Years

- IGP Analysis
- Systems Data Analysis (state data warehouse)
- Follow up of 2011 graduating class
- Continued follow up of 2014 graduating class (original 6th grade cohort)
- Analyses of 2011 and 2007 graduating classes
PROGRAMS OF STUDY: EARLY FINDINGS FROM THE STUDENT PERSPECTIVE

Corinne Alfeld

AED | NATIONAL INSTITUTE FOR WORK AND LEARNING

Ideas Changing Lives
Purpose of Study

- Longitudinal study of “mature” POS sites
  - Identify components and processes important in successful development and implementation of POS
  - Map the findings back onto Perkins IV legislation

- Why?
  - (1) to provide policymakers with feedback on the feasibility of POS, and
  - (2) to provide models and guidelines for successful POS implementation at other sites.
Criteria for Site Selection

- Secondary and postsecondary collaboration
- Dual enrollment opportunities
- Students moving from HS to college in POS
Sample
(3 sites, 7 POS)

“Desert” college
- culinary arts
- film crew technician
- construction technology

“River” college
- industrial maintenance,
- mechatronics

“Northern” college
- welding,
- automotive technology
3 community colleges (2-3 programs each) and their feeder high schools (14 total HS)

Qualitative and quantitative data collection (interviews, focus groups, surveys, transcripts)

Longitudinal (4 years, 2 cohorts), 2008-2012
Two cohorts to be followed for 4 years each

Spring 2009
Original Sample

College Cohorts

Current stage
Cohort Samples (from original 219)

HS Junior

- Cohort 1
  - 94 students

HS Senior

- Cohort 2
  - 117 students

1st year College

- 16 students in same POS in college
- 78 students

2nd Year College

- 5 students in same POS in college

*Note: This flow chart does not take into account HS dropouts or transfers
In planning what courses to take in high school, students reported talking to (at least once):
<table>
<thead>
<tr>
<th>Knowledge About Job You Would Like to Have</th>
<th>% Responding “little to no knowledge”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future demand of job</td>
<td>19%</td>
</tr>
<tr>
<td>Salary Range</td>
<td>19%</td>
</tr>
<tr>
<td>Job hours</td>
<td>17%</td>
</tr>
<tr>
<td>Advancement opportunities of job</td>
<td>17%</td>
</tr>
<tr>
<td>Different ways to get the job</td>
<td>17%</td>
</tr>
<tr>
<td>Job qualifications</td>
<td>13%</td>
</tr>
<tr>
<td>School or colleges offering needed training</td>
<td>12%</td>
</tr>
<tr>
<td>Training and education required for the job</td>
<td>11%</td>
</tr>
<tr>
<td>Job activities</td>
<td>5%</td>
</tr>
</tbody>
</table>
% of Students Participating in Work-Based Learning

- None of these: 39%
- Community service: 26%
- Job shadowing or work site visits: 21%
- An internship: 21%
- Mentoring: 18%
- Co-op: 12%
- School-based enterprise: 8%
Many college students are working, but their work experience is often unrelated to POS.

College students are talking with their parents more often than with anyone else about college and career choices.

Over half of college students said they did not have clear direction in high school.
Early Trends/Issues

- Just because a POS is strong and students have positive experiences does not mean they will continue.
  - Issue: If a student does not continue in the same POS is this a negative outcome?
- Parents need more information about educational and career options for their children
- Counselors need to be better informed about (involved in) POS
- Students need more career-related work opportunities
Do CTE Programs of Study Improve Student Achievement?  
Early Results from an Experimental Study

Marisa Castellano                Kirsten Sundell
Laura T. Overman                 Oscar A. Aliaga

National Research Center for Career and Technical Education
Rigorous Tests of POS: Participating Districts/Schools

- **West** - Three POS high schools:
  - wall-to-wall tech-focused academies (e.g., computer science, legal studies);
  - former career center with upgraded academics (e.g., construction, graphic design, automotive);
  - new specially designed facility with PBL focus (e.g., pre-engineering, hospitality, culinary)

- **East** – One POS high school:
  - wall-to-wall tech-focused academies (e.g., health sciences, pre-engineering, IT)

- **Pending** - a career academy-based POS model
On Track for Graduation at End of Ninth Grade?

- West POS: 92.9%
- West Control: 91.7%
- East POS: 88.3%
- East Control: 84.2%
Math as Reflection of Academic Press in POS

Math is embedded in many CTE programs; improved rigor in POS should show in math courses taken and test scores.

Both districts expect but don’t require 9th grade students to take or have taken Algebra 1.

Both districts offer algebra options that either extend the course over two terms or require a co-course to ensure student success.

**West:** Vast majority of sample students are in Algebra 1 or above by 9th grade.

**East:** Sample students are more broadly distributed across math levels than at West District.
9th Grade Math Levels: Below, At, and Above Algebra 1

<table>
<thead>
<tr>
<th></th>
<th>Below Alg 1</th>
<th>Algebra 1</th>
<th>Above Alg 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>West POS</td>
<td>0.6</td>
<td>51.4</td>
<td>48.0</td>
</tr>
<tr>
<td>West Control</td>
<td>0.6</td>
<td>55.1</td>
<td>44.4</td>
</tr>
<tr>
<td>East POS</td>
<td>2.4</td>
<td>61.7</td>
<td>35.9</td>
</tr>
<tr>
<td>East Control</td>
<td>10.4</td>
<td>49.6</td>
<td>40.0</td>
</tr>
</tbody>
</table>
East: Math Course Passing Rates

- Passing Any Alg 1 class:
  - POS School: 78.4%
  - Control Group: 80.2%

- Passing Above Alg 1 class:
  - POS School: 100.0%
  - Control Group: 98.0%
Conclusions

• Ninth grade is too early to see differences due to participation in POS
• Academic foundations being laid at the POS and control schools:
  – West District appears to have a strong academic press on all students in the sample
  – East District’s POS school seems to have higher expectations than the control schools, perhaps to introduce complex technical concepts in the upper-level POS courses
West District 10th Grade Test Scores

- Reading: POS Schools 329.27, Control Group 325.26
- Math: POS Schools 303.36, Control Group 291.42
- Science: POS Schools 333.27, Control Group 328.45
East District 10\textsuperscript{th} Grade Test Scores

<table>
<thead>
<tr>
<th>Subject</th>
<th>POS School</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>153.40</td>
<td>153.49</td>
</tr>
<tr>
<td>Algebra 1</td>
<td>154.98</td>
<td>153.92</td>
</tr>
<tr>
<td>Biology</td>
<td>153.54</td>
<td>154.25</td>
</tr>
</tbody>
</table>
Programs of Study: Cross-Site Analysis

James Stone
Rob Shumer
Sam Stringfield
Natalie Kosine
Interviews with: College & HS Administrators; College and HS Teachers; Business Reps; Counselors and Others

• Site 1: located in large metropolitan city in western US.
• Site 2: located in eastern US, semi-urban area with community college serving 9 school districts.
• Site 3: located in southeastern US, urban area with community college serving 2 school districts.
Incorporate and align secondary and postsecondary educational elements.

- Joint technical skill committees
- Good relationships among the various partners
- Perkins has increased the attention paid to aligning secondary and postsecondary programs.
- “Champions” play a major role
- CC had dedicated staff responsible for creating connections with secondary schools
- Strong CTE programs and experienced CTE faculty were more likely to have better alignment

Inherent cultural or mission misalignment between the secondary and postsecondary levels that is hampering these efforts.

- HS focus on meeting academic standards states
- CC focus is on industry standards & employer needs.
Coherent-rigorous academic and relevant CTE content; coordinated, non-duplicative course progression

- When integration of academic and CTE content occurs, it happens primarily in CTE courses.
- Smaller Learning Communities at three of the South Carolina sample schools appears to increase collaboration between academic and CTE teachers.
- Location on the same hall, having common planning periods, working in learning community teams, and advising a cross-section of students, all help to stimulate efforts towards integration and collaboration.
- POS sequences of courses begin with broad introductions to career areas; became more focused on specific occupations as students advanced in their pathways.
Integration Challenges

- Highly desirable but difficult to achieve.
- Although integration of academic and CTE content is a requirement in, researchers found inconsistent evidence that it is occurring.
- Undertaken by individual teachers working largely on their own and seeking assistance on an as-needed basis from peers in other curricular areas.
- Academic instructors frustrated by the difficulty of gearing academic content to students enrolled in a variety of POS career areas simultaneously.
- Some of the “integration” cited was observable only on paper and not in practice.
- Some barriers to curriculum integration arise from staffing and scheduling issues.
More Integration Challenges

- Cultural or mission misalignment of secondary and postsecondary institutions.
  - Additional disconnect between academic and CTE instructors.
  - Revenue shortfalls have led to staff cutbacks and less time for relationships to develop and documentation be completed.
Dual or concurrent enrollment; acquire PS credits.

- Student awareness varies
- Relatively few students who successfully complete dual credits courses have the credits they earned added to their transcripts at the postsecondary level.
- The requirements of POS course sequences, Advanced Placement (AP), and dual credit courses often conflict and students must make difficult choices among them.
Dual/Concurrent Enrollment

Recently legislation requiring students to take college credit while in high school.
- College scrambling to create articulation agreements with high schools
- Shortage of CTE teachers qualified to teach college-level technical programs or must be taken at college.
- If HS teacher instructs, more affordable for the districts than college faculty instructs. The districts’ priorities are to keep courses at the high school, to save money and keep high school teachers employed.
One State’s Dual Enrollment Challenge

- 17 hours of core academic credit are required to graduate (only 7 elective credits/CTE are elective)
  - No CTE course has been approved for core academic credit, even if it offers dual credit.
  - Limited space for students in available courses
  - Limited time offerings of CTE courses making it difficult to schedule CTE courses around academics
  - Limited numbers of dual credit CTE courses available.

- 57% of students in the Class of 2011 cohort reported that they planned to take at least one dual credit course before they graduated, most dual credit were in core curriculum courses.

- Finally taking CTE courses lowers students’ GPAs
  - CTE courses rarely carry honors, AP or dual credit, all of which carry higher weight than CTE courses.
  - College-bound students interested in CTE courses have to balance them with other courses to keep up their GPAs.
Lead to an industry-recognized credential or certificate at PS level, or an associate or baccalaureate degree.

- Mature Program high school students who perform well in internships or cooperative placements may be offered full-time employment when they graduate. If they accept such offers, they do not meet the POS criterion of postsecondary degree or credential attainment, but by all other measures of success, they have obviously benefited from their high school training.

- Rigorous Tests study offer the opportunity to earn industry-recognized credentials at the secondary level in at least some of their POS. The educators interviewed thought that such credentials added value to their POS, but considered excessive the costs to students to acquire certification.

- SC administrators wished more certificate programs were available to high school students.
  - Lack of industry-qualified teachers to provide the instruction for certification in some areas was often cited as an obstacle.
  - Work with local employers to learn what skills and credentials are needed, and then design their programs around these.
POS Component: Enhanced

- Legislation and Policies
- Partnerships among Education, Business, and Other Community Stakeholders
- Sustainable Leadership and Shared Planning
- Rigorous Academic and Technical Standards Aligned with Curriculum and Assessments
- Aligned Secondary and Postsecondary Education Elements
- Credit Transfer Agreements
- Accountability and Evaluation Criteria
- Guidance, Counseling and Advisement
- Professional development
- Innovative Teaching and Learning Strategies
Legislation and Policies

- The impetus for POS in one site arises from a broad-based, widely-shared desire to boost student achievement and provide educational experiences that produce graduates who are both career and college ready.
- Legislation mandates articulation of high school and postsecondary courses and specifies what some of those courses shall be.
- There is also a state-level articulation agreement between community colleges and high schools; allows colleges to accept some subset of articulated courses.
- Early evidence indicates that the SC legislation’s requirements regarding guidance have increased the influence that counselors and career specialists have on the educational and career plans of students. Only some facets of the legislation have received state funding, which has made it difficult for most schools, particularly those in high poverty communities, to fully implement the policy.
Partnerships

The OVAE framework suggests that memoranda of understanding be written; the strength of the relationships between the partners is more important than written agreements. No matter what a memorandum says, the problems that inevitably arise are more easily solved if the individuals involved know and trust one another.

When these relationships are institutionalized in formal committees, they are more likely to persist. But even such committees require considerable investment to maintain their viability.

Having staff available is as critical to the success of these efforts as is the availability of local business partners.

Few schools had staff that they could dedicate to development of these partnerships and some schools were in such remote or economically depressed regions of the state, that there were serious challenges to creating the necessary partnerships with industries.
College Partnerships

- ...Most of these activities have stopped due to budget and scheduling constraints and the higher enrollments with which the college is currently dealing.

- (Unintended consequences) the high school’s better-prepared and better-informed students are now eschewing the community college in favor of accepting scholarship offers from four-year universities.
Professional Development

- General introductions to POS requirements
- Training for new teachers from business and industry
- Program-specific professional development
- Support for guidance counselors, and trainings specific to the unique needs and contexts of the study schools.

POS Pedagogy

- Project-based learning—all new teachers receive a week of training during the summer and additional in-service learning opportunities during the year.
- Training in how to improve students’ technical literacy.
- Several of those interviewed cited models, such as Math-in-CTE

Professional development for guidance counselors included information on dual credit, credit retrieval, apprenticeships, and a workshop on improving the retention of nontraditional students in CTE programs.

One limitation to on-going professional development is the length of the contractual workday, which makes it a challenge to pay for teachers’ time after work or to arrange for full-day substitutes.
Professional Development

Delivery

- State department of education and colleges teamed up to deliver POS training.
- State-developed models in which states provide resource guides, model programs, documents, and templates were identified as especially helpful.
- Continual access to resources and regular meetings and trainings are helpful in the development and implementation of POS.
- SREB/HSTW and NRCCTE/Math-in-CTE cited
Concerns about categorizing POS participants at the secondary level and tracking them into the postsecondary system.

The results of standardized testing are publicized and teachers are expected to use data to improve their teaching and student performance. One of the schools prominently displays posters labeled “The Data” that feature the school’s standardized test results.

It is likely that many institutions across the country lack data systems that would allow reporting of data on student pathways or outcomes from secondary to postsecondary.
POS is a force for educational reform that centers on the application of academic learning in real-world contexts and involves the interactions of secondary and postsecondary institutions, business and industry, and social organizations.

One issue affecting readiness centered on students’ engagement in work-based learning (WBL) activities. Specifically, students are often restricted from engaging in WBL activities due to age requirements (under 18 years of age), safety issues, and legal restrictions in certain occupations.
Course Sequencing

- POS start with broad introductory courses and narrow their focus on specific occupations and higher level knowledge and skills as students progress through the curriculum.
- The senior year often involves projects, capstones, or WBL learning designed to integrate and apply content studied in earlier courses.
- Textbooks and curricula are selected in cooperation with postsecondary institutions as a means of aligning the two levels as well as incorporating state and national standards.
- Business, industry, and public representatives serving on advisory committees may also help to lay out course sequences according to the skills needed in the industry and the best sequences to obtain those skills.
- Often difficult for students to meet the requirements of their POS and also take AP or other dual credit courses.
- A characteristic of strong POS was regular meetings of secondary and the postsecondary faculty to discuss curriculum and plan course sequences.
Credit Transfer

- POS were identified as a catalyst for communication between secondary and postsecondary institutions.
- Challenges exist between institutions that centered on the misalignment of focus and mission between secondary and postsecondary institutions.
- Need for more time and resources to develop articulation agreements, to appropriately align curriculum, and to create dual credit.
Guidance Counseling and Academic Advisement-Focus Matters

- Career advising provided by CTE teachers-advising and mentoring students about postsecondary options, training and certification, professional standards, and college searches.
- Most of the high school counselors interviewed for the Mature Sites study did not know very much about the POS offered in their schools.
- Counselors are often focused on testing, scheduling, and student applications to four-year colleges rather than CTE programs.
- Students’ reports of career advising and course planning in the Mature Sites study showed little career advisement from counselors.
- It appears that when an increased emphasis is placed on IGPs, as is required by EEDA in South Carolina, students are likely to receive more academic and career guidance services.
Where Guidance is a Focus

POS are helping students focus not just on the "what" of high school and college, but the "why"? (Seniors talk about why they have taken the POS they have taken, what they will do next year and beyond, examples of high levels of meta-cognition and planning--complete with detailed backup plans and reasoning for their futures).

POS are causing school counselors to spread their attention across the full range of students and the full 4 years of H.S. Demonstrates need for additional professional development for counselors. (Ex. Needing to gain knowledge of what welders actually do when they graduate)
Teaching and Learning Strategies

- PBL is an important instructional strategy.
- Project Lead the Way and High Schools That Work were also cited as examples of good instructional programs.
- The stigma of taking CTE courses appears to be diminishing in some of these schools.
1. All sites had opportunities for students to participate in career specific certification programs

2. Business/industry advisory committees and CTE teachers helped integrate certification and skill assessment into their courses/programs

3. All sites used tests/systems approved by business/industry groups: NIMS (metalworking), ProStart (culinary), NOCTI (various occupations)

4. It was noted that not all industries/businesses had clear-cut skill certification; example of professional photography that required a portfolio for entry into the occupation
General Thoughts

- The implicit theory underlying POS is that a clear career focus increases engagement and improves academic performance so that students experience a smoother transition from education to employment.

- In all sites, at least some of the mandated components of POS are in place or are being put in place, but it is still too early to determine if these components will produce the outcomes specified in the legislation:
  - high school graduates who continue their education or training in the same POS they studied in high school
  - and who earn industry-recognized credentials or postsecondary degrees
General Thoughts

- Well implemented POS enhance relationships between "regular" and "CTE" teachers.
- Transition to college is not always a linear process; get jobs from effective high school programs…and eventually return to community college for more career development.
- Find more flexible ways to assess success in POS (e.g., electronic portfolios).
- Recognize CTE is an important program to “engage” students in learning…a critical element in educational reform.
- Requires sustained leadership over time.
- Even with reasonably strong efforts, change takes time. Stability at every level (including federal policy) helps a lot.
Two New Reports

- U.S. Employers increasingly complain that young adults lack “21st Century Skills”: