Unlocking SLDS: Cross-Sector Data Linking and Reporting

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Brad Phillips  
IEBC President/CEO

Mary Kay Patton  
IEBC Quality Assurance Specialist and Project Manager

John Watson  
IEBC Senior Director, Information Technology & Analytics

Janine Bocciardi  
SQL and BI Specialist

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Rules of the Road

GoToWebinar interface

(a) Control panel can be expanded or closed

(b) Raise hand to get attention of presenters

(c) Ask questions at any point, noting questions may be saved until the end.

HTML5 browsers (Chrome, FireFox)

(a)

(b)

(c)
Introduction

• Overview
• Case Studies
• Solutions, methods and technology
• Questions
Poll

• Who is with us
Overview
About IEBC Analytics

• IEBC Analytics collects and merges data from various and often disparate sources to create meaningful metrics on student outcomes

• Metrics focus on transitions between segments

• The core development group within the department has more than 25 years of experience working with educational data
Common Threads in Recent Projects
California Cross-Sector Projects

- Developed Cal-PASS
  - State-wide
    - K12, Community college, University

- Developed and managed the data system for Linked Learning pathways project
  - Regional
    - K12, Community college
    - NSC
    - Detailed pathway attribute data
Texas Cross-Sector Work

• GC-PASS
  – Regional
    • K12, Community college
Hawai‘i Data eXchange Partnership

• Hawai‘i’s DXP is a partnership of five state agencies, managed by Hawai‘i P-20 Partnerships for Education

• Statewide cross-agency, longitudinal data system
  – “cross-sector” data: individuals matched across organizations
  – Progression of individuals tracked over time

• Data used for research, evaluation, and audit purposes to improve the educational and workforce outcomes that benefit the citizens of Hawai‘i

• In this case, we built a cross-sector, analytical data layer
SLDS Needs and Expectations

• Basic requirements of early rounds of funding
  – Stakeholder access and data-use tools
  – Interoperability
  – Enterprise-wide Architecture:
    – Data Use Deliverables

• Expansion, enhancements and refinements to SLDS
  – Data use (financial equity and ROI)
  – Educator talent management
  – Early learning
  – College and career readiness
  – Evaluation and research
  – Instructional support
Where We See Challenges

• SLDS are often designed for storage but may not be optimized for reporting

• Data are often still siloed by sector

• Linking data across sectors is not the only factor in enabling effective reporting

• Reporting, especially, ad-hoc, is not necessarily efficient and effective
Where We See Challenges

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The Problem

• Most SLDS designed for storage
  – Reporting Data Systems as a component of the SLDS may not be efficient
  – Often, reporting is designed to respond to an initial set of specifications, but is not easily maintainable or scalable
Collaboration Models

**Pilot/Local multi-entity collaboration**
- Profile: Complex collaboration, multiple localized stakeholder groups
- Few participants within each stakeholder group

**Statewide / regional collaboration**
- Profile: Complex collaboration, multiple Federal, state and local stakeholder groups
  - Education (K12, CC, Univ.)
  - Workforce (Labor)
  - Early Childhood
  - Health and Welfare
- Many participants within stakeholder groups

**One or few K12, higher ed. districts**
- Profile: Simple Collaboration or no collaboration

**Statewide K12 - CC collaboration**
- Profile: Simple collaboration with multiple partners
  - Community colleges
  - K12 districts
- Simple partnership Partners/Stakeholders
Example: Hawai‘i DXP Data Sources

**CURRENT DXP DATA SOURCES**

- Hawai‘i State Department of Education
  - PK-12
  - Types of Data:
    - Enrollment
    - Demographics
    - Courses (Gr 6-12)
    - Test scores
    - Graduation
    - CTE participation
- University of Hawai‘i System
  - Postsecondary
  - Types of Data:
    - Enrollment
    - Demographics
    - Courses
    - Test scores
    - Degree/Certificates
    - Apprenticeship
    - Financial Aid
- Dept of Labor & Industrial Relations
  - Workforce
  - Types of Data:
    - Unemployment insurance
      - Wage by quarter
      - Industry code

**TYPES OF DATA:**

- Enrollment
- Demographics
- Courses (Gr 6-12)
- Test scores
- Graduation
- CTE participation
- Enrollment
- Demographics
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- Test scores
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- Financial Aid
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  - Industry code
The Cookie Story
Transition Metrics / Research Questions

What are the K-3 outcomes of early childhood learning programs?

Are there metrics that can help determine “kindergarten readiness”?

What are the middle school outcomes of elementary cohorts?

What are the high school outcomes of middle school cohorts?

What are the economic impacts of workforce development programs?

What are the outcomes for at-risk students at key benchmarks and transition points along the education-to-workforce pipeline?
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<th>Student ID</th>
<th>Ethnicity</th>
<th>GENDER</th>
<th>Gr 8 math fin. mark</th>
<th>Gr. 8 school</th>
<th>Gr. 9 assess.</th>
<th>Gr 9 math Proficiency</th>
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<td>0 Bio</td>
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</tr>
</tbody>
</table>
Visual Look at the Solution
Cross-Sector Layer Added

- SQL database
- Reporting and visualization
- Research Goals

**College and Career Research Questions**

- Transition to Kindergarten
- Elementary to Middle
- Middle to High School
- High School to Workforce
- High School to Postsecondary
- Postsecondary to Workforce

**Research Goals**

- Web reporting
- Custom reports to government agencies
- Ad hoc reporting

**Common Student ID**

- By student
- By student by Year

**By student**

- PK
- K12
- CC
- Univ
- Labor

**Custom reports**

- Standard reports
- Custom reports

**Custom reports to government agencies**
Cross-Sector Cohort Summaries Added

SQL database

PK
K12
CC
Univ
Labor

Common Student ID

By student
By student by year

Standard reports
Custom reports
Cohort Table

Reporting and visualization

Web reporting
Custom reports to government agencies
Ad hoc reporting

Research Goals

Transition to Kindergarten
Elementary to Middle
Middle to High School
High School to Workforce
High School to Postsecondary
Postsecondary to Workforce

IEBC
INSTITUTE for EVIDENCE-BASED CHANGE
Expandability

SQL database

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Research Goals

College and Career Research Questions

Transition to Kindergarten
Elementary to Middle
Middle to High School
High School to Workforce
High School to Postsecondary
Postsecondary to Workforce

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Creating the Solution
Technical Approach

• Linking data, via a common ID
• Developing an intersegmental layer
  – Student-specific tables (cross-sector information)
    • Direct copy and derived elements
  – Cohort tables
    • Derived from student specific tables using business logic
• Consistently verifying and improving data quality
Development Process: Tools and communications
Determining Optimal Structure for Solution

• Structural choices for best solution
  – Cross-sector, student lifecycle tables containing each student’s experience
  – Cohort tables
  – OLAP cube solutions
  – Combination of any or all
Table Development Process

• State prioritizes research questions, metrics

• Team identifies data elements required to support metrics

• Start with most appropriate data source
  – Warehouse vs. ODS vs. RDS
Student-Specific Table Development

• How was the table content determined?
  – Direct reporting needs
  – Support for metrics included in research agenda created by P-20
• Many data elements can be copied as-is from source
• Some elements derived using business rules developed through collaboration
  • Student can belong to multiple schools in a school year
  • Student was involved in ANY advanced placement curriculum
Cohort Tables

• Summary cohort tables designed
• Metrics with similar source and result data grouped
  – 8th graders and their high school and postsecondary experiences
  – 9th graders and their K-8 grade experiences
• Cohort tables are the final step in the solution and are used as direct input to reports
Process

State: Research questions and metrics development

State/IEBC: Initial review of metrics and data

State/IEBC: Timeline planning/review, priority setting

Priority 1 data elements and metrics credit threshold

Priority 2 data elements and metrics credit threshold

Priority 3 data elements and metrics credit threshold

Priority N data elements and metrics credit threshold

State: Progress review

State/IEBC: develop element definitions and business logic

IEBC: Student and cohort table development

Work forward to include metrics if adjacent elements

Adjustments required to data element definition or metrics

State/IEBC: Incremental review

Sufficient progress on priority group. Add next priority

State/IEBC: Initial review of metrics and data

IEBC: Student and cohort table development

State: Research questions and metrics development

State/IEBC: Initial review of metrics and data

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Sufficient progress on priority group. Add next priority
But What About Documentation?

KEEP CALM AND READ THE DOCUMENTATION
Reporting

• Reports can be generated using a variety of techniques, from ad hoc queries to visualization systems like Tableau.

• Outputs can be tied to on-line web-based reporting and dashboards.

• Data extracts containing specific sub-sets of metrics and summary data can be set up to run on demand or automatically.

• Additional metrics can be reported on as needed using SQL queries.
Solution Addresses Common Issues

- Data quality
- Dissimilarity of needed common fields, like GPA or ethnicity
- External data sources (ACT, AP, NSC)
- Complexity of data, considering all sources and sectors
- Data mass
Additional Benefits to Approach and Process

– Benefits from processes
  • Data quality reviews
  • In-line documentation

– Benefits to future work
  • Expandability
    – Student-specific tables can be expanded
    – Additional cohorts added
    – Labor, social services, ..
Poll

• What are you currently working to accomplish?
Thank You

QUESTIONS?

Mary Kay Patton  mkpatton@iebcnow.org  916-995-3183
Janine Bocciardi  jbocciardi@iebcnow.org  760-436-1477
John Watson  jwatson@iebcnow.org  530-204-7129