The Ontario School Information System (OnSIS): An example of a Longitudinal Education Data System

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Outline

- Purpose
- Background
- Local Use and Data Collections
- Analysis, Data Integration and Reporting
Purpose

- Overview of the Ontario School Information System (OnSIS), one of a suite of tools that inform decision-making for policy, programs, and practice within the Ontario education system.
Background
Ontario Education

- Ontario's school boards and school authorities operate the province's publicly-funded schools.

- The 72 school boards in Ontario include:
  - 3,978 elementary and 913 secondary publicly-funded schools;
  - Over 115,000 full-time equivalent teachers; and
  - Over 2 million students.

Source: Ontario School Information System (OnSIS), 2012-2013
Managing Information for Student Achievement

- The Managing Information for Student Achievement (MISA) initiative has targeted the building of data capacity at both the local (school board) and provincial levels.

- Local Capacity Building Focus:
  - Data management
  - Technology
  - Data use

- Provincial Capacity Building Focus:
  - Data collection
  - Data integration, analysis and reporting
Providing Support and Capacity Building for Boards

- Ministry has supported boards in growing capacity to work with data. For example:

  - In school boards:
    - Tracking key indicators supports superintendent-principal discussions concerning strategies for improved student outcomes;
    - Improved capacity to analyze program/enrolment data helps to inform resource allocation.

  - In classrooms:
    - Data walls across classrooms;
    - Teacher-accessed classroom dashboards including EQAO (provincial assessment), report card, attendance and literacy data.
MISA – Professional Network Centres (PNC)

- Seven (7) Centres have been established across Ontario:
  - Six (6) regional, English-language Centres
  - One (1) province-wide French-language Centre

- PNCs function as linked professional learning communities.

- PNCs complement the efforts of individual boards and schools as they build capacity to work with data to support evidence-informed decision-making.
Local Use
&
Data Collections
Ontario School Information System (OnSIS)

**Legacy**
- School Enrolment Data
- Teacher Data
- Student Data
- Course/Class Data
- Board Data
- Other Data Collections

**OnSIS**
- School Data
- Board Data
- Courses/Classes
- Students
- Educators
  - Ministry Educator Number (MEN)
  - Ontario Education Number (OEN)
Provincial Data Collection - OnSIS

- The Ontario School Information System (OnSIS)
  - Launched in 2005-06 to collect/manage education data
  - Secure, web-enabled system
  - Used by public schools/boards, private schools at elementary and secondary levels.

- OnSIS collects data on courses, classes, students and educators three (3) times a year (October, March and June).

- Determining what data is collected is a process that involves policy and program branches throughout the ministry.
Other School data can be aggregated from Students, Educator/Staff, and Course/Class
Other Board/District data can be aggregated from Students, Educator/Staff, Course/Class and Schools
OnSIS Data Reference

Other Course/Class data can be aggregated from Students, Educator/Staff and Schools.
Ontario School Information System (OnSIS)

Increase in the quantity of data collected each year

Over 1300% increase in data records collected from boards

7.7 million data records collected each year

~110 million data records with multiple data points collected each year

Legacy Collections

OnSIS Collection
OnSIS Data Collection Timeline Comparison

Months to complete 95% of collection

School Year

October
March
June

Support every child
reach every student

Ontario
Ontario Education Data Warehouse

OnSIS collects hundreds of millions of records multiple times every year - this data is then validated, depersonalized, and transferred to the Ontario Education Data Warehouse for access by staff.
Quality Assurance Framework

- 5 pillars in the development of Quality Assurance processes and requirements:

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Completeness</th>
<th>Accuracy</th>
<th>Precision</th>
<th>Timeliness and Quadrant Analysis</th>
</tr>
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<tbody>
<tr>
<td>comparison of submission cycles; year over year trends; consistent with other data sources; e.g. enrolment verification review and EFIS</td>
<td>no null or missing values; all expected data elements have been reported; complete school and board submissions; ratio of enrolments to courses</td>
<td>data profiling to ensure data value integrity; verification of data against business rules; no null or missing values; source data reasonably approximate the definitions, scope, classifications</td>
<td>Cross validation of derived aggregations</td>
<td>Validation of sub-population against total population or regional and sub-regional totals against provincial totals</td>
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The overall Quality Assurance framework includes the timeliness, relevance and accessibility dimensions, which are shared between the data collection and data sharing processes.
Analysis, Data Integration and Reporting
Provincial Data Integration, Analysis and Reporting

- Data warehousing environment - Operational Data Store (ODS) / Elementary and Secondary Data Warehouse (ESDW) - holds depersonalized data.

- Enables analysis and reporting of student achievement over time.

- Significantly enhanced capacity to:
  - Support ministry analytical needs; and
  - Provide key indicator data about ministry priorities.

- Cohort based measures provide a more complete picture of student success over time. For example:
  - Provincial graduation rate
  - Credit accumulation rate
  - Education Quality and Accountability Office (EQAO) scores
Opportunities for Provincial Data Integration

- Policy and program analysis that considers social and economic contexts of schools and boards uses the administrative data to supplement survey and census data.

- MISA has built capacity to contextualize achievement data with socio-economic, descriptive, program, and perceptual data leading to more granular and locally relevant approaches to student success.
Analytical Opportunities and Projects in Development

- Ministry conducts statistical modelling and trending activities using OnSIS data.
  - Analysis supports decision-making across a wide range of policy and program areas and initiatives.

- Several categories of analytical projects underway:
  - Modelling, trending and projections
  - In-depth analysis of education data
  - Indicator development
  - Visual analytics tool development
Reporting Products for Information Dissemination

- Education Facts/Quick Facts
  - Provincial-level data

- Board Progress Report
  - Board-level data

- School Information Finder
  - School-level data

- International and Pan-Canadian Reports
  - Pan-Canadian Education Indicators Program
  - Elementary and Secondary Education Statistics Program

- Indicator Development
  - Development of indicators that offer insights on the provincial education system, which can have implications for policy development.
Example 1: Ontario Notable Education Trends

- Analysis activities include disseminating information on new indicators through the Ontario Notable Education Trends (ONET) initiative, which are developed in collaboration with other areas of the government.

- ONET supports evidence-informed decision-making by providing:
  - Methodologies that can support public reporting, open data and requests from policy areas.
  - Information on the education system that can be used for analysis and monitoring to inform decision-making.
  - Insights into many aspects of Ontario’s publicly-funded schools; can help determine what is working, identify risks and, locate promising practices.
  - Support for strategic planning through trending and analysis.
Example 2: Board Interface Reports

- The Board Interface: an interactive web-based reporting tool showing boards their schools’ and board-level information alongside provincial figures.

- Enables boards to access and further analyze data.
Ongoing Analysis: Longitudinal Tracking

A student’s unique Ontario Education Number (OEN) allows for:
- Linking of OnSIS data to other datasets.
- Tracking of student achievement and other outcomes for a given cohort or other groups of students.

For example, longitudinal tracking provides opportunities to:
- Identify students at risk of not graduating for early intervention.
- Helping students improve and maintain achievement.
Examples of Provincial Longitudinal Tracking

- **Junior Division Sustained Achievement Index** in Mathematics, Reading and Writing measures the change in the proportion of students who met or exceeded the provincial standard between Grades 3 and 6.

  - The indicator can be measured at the provincial-level, board-level, and by other student sub-groups (e.g. students with special education needs) to help track student achievement and opportunities for offering support.

- **The College/University Direct Registration Indicator** is the number of Ontario secondary school students from a Grade 9 cohort who are reported as registering directly in a university or college in Ontario within 4 years and within 5 years from Grade 9.

  - The indicator can be measured at the provincial-level, board-level and by sub-groups in order to understand the factors that impact the pursuit of opportunities beyond secondary school.
Thank you!

Questions?