CONNECTING DATA TO ACTIONS FOR IMPROVED LEARNING

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How are we learning from learning?
An online program’s story
Insights into Learning

- Observations, checklists
- Assessments
- SIS
- LMS logs

PAST: Pre-2010 Learning from Learning
Insights into Learning

- Observations, checklists
- LMS logs
- Self reports
- Assessments
- Adaptive systems
- Device usage
- Effort
- Social network analysis
- Badges
- Games
- Making
- Voice, gesture, ink input
- Predictive analytics

PRESENT: 2015 Learning from Learning
FUTURE: Next gen Learning from Learning

Insights into Learning

Augmented reality
Wearables
Internet of Things

Predictive analytics
LMS logs
Self reports
Assessments
Adaptive systems
Device usage
Making
Games
Badges
Social network analysis
Effort
Voice, gesture, ink input
Observations, checklists
Device usage
Effort

Augmented reality
Wearables
Internet of Things
WINDOWS INTO LEARNING FOR STUDENTS, PROGRAMS, QUALITY ASSURANCE, RESEARCH

Past patterns + current snapshot

Data from SIS, LMS, CMS, other sources

Machine learning from analytic models

Predicted outcomes + suggested actions
WINDOW INTO CURRENT AND PAST STATUS: VISUALIZATION

1. **Source Data**
   - Historical performance
   - Student demographics
   - Diagnostic
   - Disciplinary
   - Extra-Curricular

2. **Existing Worksheets**

3. **Datasets**

4. **Power BI Visualization**

**Data dashboards**

- Teacher
- Principal
- Superintendents/CIO

**Source Data**
- Historical performance
- Student demographics
- Diagnostic
- Disciplinary
- Extra-Curricular

**Power BI Visualization**

**Datasets**
WINDOW TO FUTURE STATUS: MACHINE LEARNING

Static Data
- Past academic performance
- Student demographic
- Content and curriculum

Dynamic Data
- Extra-curricular
- Diagnostic
- Learning behavior

Existing Data Sets from Data Systems

Datasets

Power BI Visualization

Machine Learning

Data

Prediction
At Risk Prediction Model

This is how Azure Machine Learning Builds the At Risk Model. Anyone can do this!
At Risk Prediction Model

Azure Machine Learning Model is 80% Accurate predicting who is at risk of failing a class

Further away from 45° diagonal is “better”%
Intervention Prediction Model

Model is more complex than at risk prediction, but still the same basic drag and drop to-build
Insight and Action to Improve Learning from Data

Microsoft in Education Team 5 Mar 2015 6:00 AM

What if teachers had detailed windows into each student’s past learning? What if school leaders had these windows into learning and teaching for their schools? What if these views of learning looked into the future as well as the past?

Education organizations of all kinds are struggling to do more with less. A cost they have taken on in recent years is the cost of maintaining immense and growing stores of data on their programs. Some data are collected purposefully, for example, student and staff records. Some data are mandated to be archived and protected, and some data are generated by systems such as learning and content systems. While education leaders know that their data can be used to study and make sense of these data, many education organizations lack the manpower, tools, and expertise to make use of these data. These organizations include schools and systems at all levels from pre-K to adult, colleges, universities, governments, private training providers, education research groups, and NGOs that work in the education sector. To make use of data and information that is critical to improve learning outcomes and how we teach and learn, we need to move beyond traditional data management and reporting.
LEARNING WITHOUT BOUNDARIES

NOT CONSTRAINING STUDENTS BY TIME, PLACE, PATH, OR PACE