



Transforming Data to Information in Service of Learning

May 2013

Common Definitions • Sharing Information • Learning • Discovering Resources

Executive Summary

While states, districts, and schools have long collected education data, we still lack the ability to easily transform that data into information that will help guide policy or decisions affecting instruction, school administration, and operations. Education data and information systems need to be in service of learning. We must think systemically about how to make information easily accessible to help guide decision-making in a way that is usable in support of student success. Simply put, we must raise the profile of data interoperability issues if we are serious about increasing learning opportunities for all of the nation's students.

The State Educational Technology Directors Association (SETDA) developed this report to raise awareness about many of the major initiatives currently underway to address data standards and interoperability issues. The widespread implementation of new and emerging interoperability initiatives has the potential to herald the arrival of a new educational technology ecosystem truly responsive to educators and in support of student success.

New leadership will be required from the federal government, state governments, and the technology industry to make needed advances. SETDA offers three recommendations to move the field forward:

- **Recommendation 1:** Develop a consensus-based, long-term vision and roadmap for interoperability to ensure investments in technology and digital learning are cost effective and meet educator and student needs.
- **Recommendation 2:** Establish an ongoing mechanism to address transparency related to the privacy and security of student data.
- **Recommendation 3:** Address data standards and interoperability issues with vendors as part of state and district procurement processes for educational technology and digital learning solutions, including for the adoption of free solutions.

As this report demonstrates, there are many organizations working on these issues now, but we will need many more people engaged if we are to make a difference. It is our hope that this report will become an opening to a much deeper and sustained conversation about how to ensure that we successfully make the transition from data to information in service of learning.

To view the full version of this paper visit <http://www.setda.org/web/guest/datatoinformation>.

Data Standards and Interoperability Initiatives

Consistent Data Definitions: Select Initiative Profiles

These initiatives focus primarily on providing a common language or vocabulary and structure that are a precursor to the seamless sharing of data among different systems and applications. While the organizations we profile for this category address different education needs, many also cooperate with each other by adopting and incorporating each other's work within their own data standards efforts.

| Name of Initiative | Description |
|---|--|
| Assessment Interoperability Framework (AIF) | AIF provides a common structure to allow for the transfer of any data associated with assessment systems; including student and teacher information, learning standards, assessment items, results, and related data across systems. |
| Common Education Data Standards (CEDS) | CEDS provides a common vocabulary and reference structure through a data dictionary and logical data model for information that needs to be shared across education organizations. |
| IMS Global Learning Consortium Specifications | IMS content, application, and data standards enable teachers to mix and match educational content and software from different sources into the same learning platforms. |
| P20W Education Standards Council (PESC) | PESC consists of numerous standards for sharing specific types of education data, such as financial aid, transcript, and admissions information. |
| SIF Implementation Specification | The SIF Implementation Specification is a technical standard that is used by developers of education software to ease the transfer of data among applications in use by schools, districts and state education agencies. |

Additional information about each of these initiatives can be found in the "Select Initiative Profiles" section of this report.

Sharing of Information Across Systems: Select Initiative Profiles

These initiatives provide rules for allowing data to move between and among applications without it first having to be transformed in some way. Two of the organizations whose projects are profiled here—Ed-Fi Solution and inBloom—also provide additional functionality, such as facilitating the reporting of data through dashboards.

| Name of Initiative | Description |
|---|---|
| Digital Passport | Digital Passport is a tool that brokers the exchange of student data between states or districts to enable electronic record transfer as students move from one school to another. |
| Ed-Fi Solution | Ed-Fi Solution is a data model combined with a tool suite that streamlines the sharing of student data and also provides the elements of dashboards for use by educators to improve the academic outcomes of students. |
| Experience API (xAPI) | xAPI is a protocol and simple data format for sharing learning activity streams among systems to track student activities and securely expose data to other learning systems. |
| inBloom (formerly, Shared Learning Collaborative) | inBloom is currently working with districts to bring together secure student data, services and educational applications into a unified solution to help teachers more easily track student progress, pinpoint areas of concern, and identify the best learning resources to help students learn. |

| | |
|----------------------------------|---|
| MyData | MyData is the functionality within any system containing student data that allows students and their families to export their data in an open format to maintain a copy of their own education records. |
| Open Badges Infrastructure (OBI) | The Open Badges Infrastructure is a standard and platform for issuing, storing, and sharing “micro-credentials,” recognition for skills and achievements that learners have completed. |

Additional information about each of these initiatives can be found in the “Select Initiative Profiles” section of this report.

Search, Alignment, Discovery of Education Resources: Select Initiative Profiles

These initiatives are intended to optimize the process of finding appropriate resources, including standards-aligned resources, whether through an online search engine or across independently-operated, affiliated content repositories.

| Name of Initiative | Description |
|--|--|
| Granular Identifiers and Metadata for the Common Core State Standards (GIM-CCSS) | GIM-CCSS is creating a digital representation of the CCSS to meet the need of assessment for standards alignment to ascertain the breadth and depth of standards coverage for testing purposes. |
| Learning Registry | The Learning Registry is an open repository of metadata and paradata about digital learning resources across the internet, including location and information about alignment to learning standards. |
| Learning Resource Metadata Initiative (LRMI) | LRMI provides a common structure for tagging of learning resources that can be used by online search engines and content delivery platforms to deliver more precise results and richer filtering capabilities. |

Additional information about each of these initiatives can be found in the “Select Initiative Profiles” section of this report.

Data Standards and Interoperability Initiatives: Purposes and Beneficiaries

To offer an overview of the primary purposes and beneficiaries of the data standards and interoperability initiatives profiled in this report, the chart below organizes them in two important ways. The initial columns indicate both the primary and secondary purposes of each initiative. The remaining columns indicate the primary beneficiaries of these initiatives, presuming their full implementation.

| Initiatives | Purposes | | | Beneficiaries | | | | |
|----------------------------------|-----------------------------|---------------------------------------|--|---|--------------------------|-----------------------|---|---|
| | Consistent data definitions | Sharing of information across systems | Search, alignment and discovery of resources | Content and assessment providers/Creators | Teachers/ Administrators | Students and families | State Standards and assessment administrators | Curriculum and instructional technology personnel |
| AIF | ■ | □ | | ✓ | | | ✓ | ✓ |
| CEDS | ■ | | | ✓ | | | ✓ | ✓ |
| Digital Passport | | ■ | | | | | | |
| Ed-Fi Solution | □ | ■ | | | ✓ | | ✓ | ✓ |
| Experience API (xAPI) | □ | ■ | | ✓ | | | ✓ | |
| GIM-CCSS | | | ■ | ✓ | | | ✓ | |
| IMS Specifications | ■ | □ | | ✓ | ✓ | | ✓ | ✓ |
| inBloom | | ■ | | | ✓ | ✓ | ✓ | ✓ |
| Learning Registry | | □ | ■ | ✓ | ✓ | ✓ | | ✓ |
| LRMI | ■ | | ■ | ✓ | ✓ | ✓ | | ✓ |
| MyData | | ■ | | ✓ | | ✓ | ✓ | ✓ |
| Open Badges Infrastructure | □ | ■ | □ | ✓ | ✓ | ✓ | | |
| PESC | ■ | □ | | | ✓ | ✓ | ✓ | ✓ |
| SIF Implementation Specification | ■ | □ | | ✓ | ✓ | ✓ | ✓ | ✓ |

Presenters Biographies

Douglas A. Levin, Executive Director, SETDA

Named by Tech & Learning as one of the top 10 most influential people in EdTech in 2011, Douglas Levin is the Executive Director of the State Educational Technology Directors Association (SETDA). In this position, he works with and represents U.S. state and territorial educational technology directors to other national education groups, federal policymakers, the U.S. Department of Education, the private sector, and the media. Doug brings 20 years of Washington, DC-based education policy and research experience to SETDA. He formerly worked with the National Association of State Boards of Education, the American Institutes for Research, and Cable in the Classroom, the cable industry's national education foundation. He played key roles in developing the nation's first three national education technology plans and in conducting research and evaluations of major educational technology programs and initiatives, including as primary author of the groundbreaking Pew Internet study of internet-savvy students, *The Digital Disconnect*. By appointment of Governor McDonnell, he serves on the Virginia Open Education Curriculum Board and is a 2006 recipient of a Making It Happen award for educational technology leadership. Doug served as an IEL Education Policy Fellow from 1998-99, holds a Master of Arts degree in Sociology from George Washington University, and a Bachelor of Arts degree in English from the College of William and Mary.

Christine Fox, Director of Educational Leadership and Research, SETDA

Christine is the Director of Educational Leadership & Research for SETDA. Christine's tasks include member professional development planning and implementation, research, and report writing. She manages the development of the annual SETDA national educational technology trends report, other SETDA research products and white papers, association professional development programs, and oversees all conference and event content. Christine Fox's background includes experience in education and consulting. She worked as a 3rd grade teacher, ESOL coordinator, educational consultant and curriculum developer for a national whole school reform model. Christine has a Master's degree in Teaching English as a Second Language from Florida International University and received her Bachelor's degree in English Literature from Florida State University.

Neill Kimrey, Director of Digital Teaching and Learning, North Carolina Department of Public Instruction

A life-long learner and educator, Neill is beginning his 21st year in educational technology. He currently serves as the Director of Digital Teaching and Learning at the North Carolina Department of Public Instruction, and has been with the NCDPI since October 2008. Prior to this, Neill was involved in technology in Stanly County Schools, North Carolina. He began his career as a computer lab assistant in 1991 and was the district's Chief Technology Officer when he left in October 2008. Since beginning his employment at NCDPI, Neill has reached out to begin building partnerships with many agency and groups to assist in the advocacy of instructional technology. Some of the groups and agencies include LEARN NC, the North Carolina Virtual Public School, MCNC, and the William and Ida Friday Institute for Educational Innovation. Neill has been active in educational technology at the district, regional, state, and national levels, and currently serves on various state and agency leadership committees, including the Board of Directors of the State Education Technology Directors Association.

Kayla Siler, Policy and Planning Analyst, North Carolina Department of Public Instruction

Kayla Siler is a Policy and Planning Analyst with the North Carolina Department of Public Instruction (NCDPI). Since beginning at NCDPI in December 2007, Kayla has worked in data research, policy and strategic planning, and project management. Most recently her work has been directly connected to the reform in standards, assessments, and accountability, as well as within various projects in NC's Race to the Top initiative. Her key area of focus has been in supporting the transition to online assessments through collaboration and communication efforts across curriculum, testing, and technology areas. Kayla completed the Education Policy Fellowship Program and received her B.A. in Political Science from Meredith College and an MPA from North Carolina State University.

James Yap, Director of Technology, Byram Hills School District, New York

Currently, James Yap is the co-lead for the North American Advisory Board for SIF. James was appointed the Director of Technology in July of 2012 at Byram Hills Central School District. In his short time there, James has already installed six SIF agents and continues to grow that environment. He has also established a Google Apps presence and hopes to be completely cloud based for file and email storage within five years. In 2004, James became the Director of Instructional Technology and Data Management at Ramapo Central School District and held the position for 8 years. While there, he created a SIF environment with over 11 agents. In 2006, James won the Excellence in Teaching and Learning award from Apple Computer for helping to implement a laptop initiative into New York School for the Deaf. Before his tenure at Ramapo, He was an educational consultant, helping teachers infuse technology into their curriculum within a problem based learning modality. James Yap started his professional career at American School for the Deaf teaching history and English in American Sign Language James currently resides in Highland Mills, New York with his wife of 10 years and 2 daughters.

Richard Culatta, Acting Director, US Department of Education, Office of Educational Technology

Richard Culatta is a leader in the field of educational innovation. He has worked in K-12, higher education, corporate, and government training environments. His current focus as Acting Director of the Office of Educational Technology for the US Department of Education is on using data and learning analytics to create customized learning experiences for all students. Prior to joining the Department of Education, he served as an education policy advisor to US Senator Patty Murray. Culatta is a certified Spanish teacher and active in promoting bilingual and arts education in public schools.