Common Data Standards Progress Report

Efforts to organize and coordinate Common Data Standards (CDS) for state-based, longitudinal purposes continue. Most recently, a Common Statement of Purpose (attached) was released to communicate the overall purpose of the activities and events being undertaken and to identify scope. The CDS group has been meeting regularly over the past few months and will soon create two subcommittees: one on advocacy and one on adoption. (continued on page 7)
Data Summits are working meetings that focus on development, implementation and overall connectivity. Other topics of interest that impact common data standards, data systems, and interoperability are also discussed.

All meetings and discussions are open to all attendees. Engaging discussions, new business contacts, awareness of technical resources and best practices, identification of emerging technologies, and tips from experts of leading community organizations can be expected.

Sessions at the Spring 2010 Data Summit will be held on the following efforts and topics:

**Development Efforts**
- Academic Progress Workgroup
- Education Record User Group
- e-Portfolio Workgroup
- Recruitment & Enrollment Workgroup

**Board & Committees**
- Change Control Board
- Steering Committee
- Technical Advisory Board

**Discussion Topics**
- Authentication & Role Based Access
- Common Data Standards
- EdUnify
- Kuali Student
- National Education Data Model (NEDM)
- RS3G & the Bologna Process

Plus, our special guest speaker Karen Cator (Director of Educational Technology), the annual spring reception, and the 12th annual meeting of PESC’s membership.
REGISTRATION FORM

Sessions at the Spring 2010 Data Summit will be held on the following efforts and topics. Please indicate which sessions you will most likely attend (please check all that apply):

Development Efforts
- Academic Progress Workgroup
- Education Record User Group
- e-Portfolio Workgroup
- Recruitment & Enrollment Workgroup

Board & Committees
- Change Control Board
- Steering Committee
- Technical Advisory Board

Discussion Topics
- Authentication & Role Based Access
- Common Data Standards
- EdUnify
- Kuali Student
- National Education Data Model (NEDM)
- RS3G & the Bologna Process

YES, register me for the Spring 2010 Data Summit

PESC Member
$195

NON Member
$345

Contact Person and Title
Organization Name
Street Address
City, State and Zip
Phone
Fax
Email Address
Payment Amount

PRINT a program and all meeting materials for me.
DO NOT PRINT for me, I’ll print and bring my own copies.

Please complete this form and send it along with a check payable to:
Postsecondary Electronic Standards Council
1250 Connecticut Ave, NW
Suite 200
Washington, DC 20036
Fax: 202-261-6517
PESC’s tax ID# is 52-2179499

Online registration is available January 11, 2010 at www.PESC.org.
The dress code is business casual.
Please contact Jennifer Kim, PESC’s Membership Services Manager, for more information and special arrangements at 202.261.6514 or at Jennifer.Kim@PESC.org.

NO, I am unable to attend but please notify me of future Data Summits (list contact info above).

Contact the hotel directly by February 26, 2010 for reservations:
Hyatt Regency Washington on Capitol Hill
400 New Jersey Ave NW
Washington DC 20001
800.233.1234
$209/night in PESC Group
A Statement of Common Purpose:
Chief State School Officers and State Higher Education Executives
Promote the Voluntary Adoption of a Model of Common Data Standards

The Council of Chief State School Officers (CCSSO) and the association of State Higher Education Executive Officers (SHEEO) are collaborating with their members, the U.S. Department of Education, and national educational entities toward the development of model data standards for K-12 and postsecondary education. The goal of this collaborative effort is to leverage and create model data standards that will attract widespread, voluntary adoption and ultimately enhance policy-making and student achievement. Initially, the project will focus on data related to the transition from high school to postsecondary education.

The diversity of America’s elementary, secondary, and postsecondary schools and institutions is a national asset. But an unintended consequence of diversity is that schools and institutions may define and collect core data elements in slightly different ways. These discrepancies in data collection can cause students to lose momentum when they move from school to school, and state educational leaders often have difficulty identifying and monitoring student needs and communicating key information to the public.

For example, these small differences make it harder to communicate student needs and previous achievements when they transfer or begin college, and they can make it impossible to come up with valid information on relatively simple questions such as student achievement, drop-out rates, teacher mobility and shortages, or graduation rates for a school, district, or state. Education in the United States could be improved if most schools and institutions used common standards for the core data they identify, collect, retain, and use.

Standard measures and procedures are crucial in business, computing, health care, engineering, and construction – just about every part of life. The key questions involve deciding what needs to be standardized, what does not need to be standardized, and why standardization will serve important purposes. Such decisions need to consider different purposes at different levels (individual schools, districts or systems, states, and the nation), the benefits of standardizing different kinds of information, the costs of changing existing systems in order to achieve greater standardization, and how data standards and practices can be improved in a reasonable time frame and at a reasonable cost.

With support from the Bill & Melinda Gates Foundation, CCSSO and SHEEO will work with their respective members, partner on communications with the Data Quality Campaign funded by the Michael & Susan Dell Foundation for this effort, provide feedback on standards design to the U.S. Department of Education, and engage policy and information system experts from the states, standards groups, associations, and individual schools and colleges to address the what, why, and how questions for model data standards.
The U.S. Department of Education will facilitate the leveraging, and where needed, the development of model common data standards for a core set of student-level variables to increase comparability of data, interoperability and portability of data, and reduce collection burden. A Technical Working Group comprised of representatives of key stakeholders will identify the core subset of student variables and common definitions, model business rules and technical specifications for these variables. The list of variables and model standards will be shared with states, districts and postsecondary stakeholders for feedback and discussion, in order to achieve broad consensus and voluntary adoption. Existing definitions, standards and guidelines for state and federal reports will provide a foundation for this work, but proposals for improving definitions and guidelines will be invited and considered.

CCSSO and SHEEO will promote the voluntary adoption of these model data standards by states, districts, K-12 schools, postsecondary institutions and marketplace providers. While this initiative’s fundamental purpose is to provide better information to those seeking to improve education, it also will make it easier for schools, colleges, and states to meet existing reporting requirements. Recently authorized and funded federal grant programs are available to help finance such improvements in educational data systems. Decision makers in individual states, schools, and colleges will make the ultimate decisions about their data standards, but the project seeks to develop highly useful and valuable standards that will attract widespread adoption.
What is the Common Data Standards Initiative?

The Common Data Standards (CDS) Initiative is a national, collaborative effort to develop voluntary, common data standards for a key subset of K-12 (e.g., demographics, program participation, course information) and K12-to-postsecondary education transition variables. Participants in the Initiative include representatives from states, districts, higher education organizations, and key non-profit organizations. The CDS Initiative’s goal is to identify a list of key K-12 and K12-to-postsecondary transition variables (expansion into PreK and the workforce will be considered in the future) and agree upon standard definitions, code sets, business rules, and technical specifications for those variables. This will increase data interoperability, portability, and comparability across states, districts, and higher education organizations.

The Education Science Reform Act of 2002 gave the National Center for Education Statistics (NCES) the authority to determine voluntary standards and guidelines to assist state educational agencies in developing statewide longitudinal data systems (SLDss). To this end, NCES is working with key stakeholders to develop standards for a core set of data elements to ensure that states create P-20 data systems that meet the goals of the American Recovery and Reinvestment Act of 2009. Standard data definitions will help ensure that data shared across institutions are consistent and comparable. This, in turn, will make it easier to transfer student data from one school or level of education to another, and permit states to learn how students fare as they move across institutions, state lines, and school levels.

Why do we need common data standards?

Students are mobile throughout their education careers, and we must be able to keep pace with their mobility in our efforts to transfer student information. Much of the need to transport student records occurs at predictable times as students progress through the education pipeline: from elementary to middle school, middle to high school, or high school to a postsecondary institution. However, mobility isn't always foreseeable.

When families relocate and students show up to enroll in their new schools, K-12 and postsecondary organizations must be able to easily share student-level data and transcripts so that records are readily available in an understandable format (i.e., adherent to common data standards). The receiving schools need this information immediately in order to provide appropriate services (e.g., special education, free- or reduced-price lunch) and to place students in the correct grades and course levels.

When Hurricane Katrina made landfall in the summer of 2005, the need for comparable data and interoperable systems hit home with gale force as tens of thousands of students were displaced from their schools. These students’ records needed to be shared with recipient states within a week’s notice—a challenge that could have been more easily met with common data standards.

What will common data standards accomplish?

The current lack of alignment of standards for key data elements hampers our efforts to share information quickly and consistently. The uniform adoption of standards for key education data offers some significant benefits. It will:

- increase the comparability of data across state lines, allowing us to draw valid comparisons;
- increase the interoperability and portability of data within K-12, across state lines, and with the postsecondary sector, PreK, and the workforce; and
- reduce the collection burden on districts.

CDS is NOT

- **Required:** Adoption of any or all of the CDS elements by state K-12 and postsecondary institutions is entirely voluntary.
- **A data collection:** CDS does not collect data.
- **A Federal unit record system:** CDS is a model for data standardization to enable data sharing between state systems.
- **Solely a U.S. Department of Education undertaking:** CDS is a fully collaborative effort including local, state, and national organizations.
Who is participating in the CDS Initiative?

The Initiative's common data standards are being developed with the guidance, input, and participation of representatives from a broad range of stakeholder groups. CDS consists of a two-pronged approach, focusing both on developing technical standards and communicating with stakeholders to encourage the adoption of those standards. The two fronts of the CDS Initiative include 1) technical standards development and 2) communications and adoption.

### Technical Standards Development

The Technical Working Group (TWG), facilitated by NCES, will compile and refine a set of common data standards, including definitions, permitted values, and technical specifications. The TWG will also solicit feedback on the standards from the NCES Forum, the broader postsecondary community and standards bodies as they are developed and before release of the final product. Partners include representatives from several state and local education agencies, higher education organizations, the Council of Chief State School Officers (CCSSO), the State Higher Education Executive Officers (SHEEO), the Data Quality Campaign (DQC), the Postsecondary Electronic Standards Council (PESC), and the Schools Interoperability Framework (SIF) Association.

### Communications & Adoption

CCSSO and SHEEO (supported by the Bill & Melinda Gates Foundation) in partnership with the DQC (supported by the Michael & Susan Dell Foundation), will lead the Initiative's communications and adoption effort. These organizations will educate stakeholders—states, districts, K-12 schools, postsecondary organizations, and marketplace providers—about the standards developed by the TWG and encourage them to voluntarily adopt and implement the standards. Frequent feedback from the stakeholder groups will be solicited to refine the standards and create broad consensus and buy-in. (This arm of the Initiative has its own informational materials.)

### CDS Technical Working Group Timeline

**Year 1:** Technical Working Group will:

- Establish Initiative's scope and identify initial list of K-12 and K12-to-postsecondary transition variables to be included.
- Agree on definitions, codes sets, and business rules for each element.
- Identify technical specifications for each element to facilitate the collection and transport of those elements across education institutions.*
- Solicit feedback and buy-in by sharing standards with broader partnership.
- Produce documents, which will include:
  - a list of elements with thoroughly documented definitions, code sets, and business rules;
  - detailed technical specifications for each element (e.g., XML schema, machine readable format, etc.); and
  - documentation of the governance process for maintenance and expansion of the common data standards, detailing:
    - Who is engaged?
    - What are the roles and responsibilities of each type of stakeholder?
    - How are common data standards reviewed, expanded, and considered for sunset?

**Year 2:** Technical Working Group will:

- Review and consider the expansion of K-12 and K12-to-postsecondary transition variables; and
- Consider expansion into the full P-20 spectrum from early childhood education to the workforce.

**Year 3:** Technical Working Group will review existing standards for possible expansion, adjustments, or sunset.

* The CDS elements and associated technical specifications will be drawn or adapted from existing documents (e.g., the NCES Handbooks, SIF Association specifications, PESC schema, and the National Education Data Model) or developed from scratch.

For more information on the development of the standards, contact CDS Technical Working Group facilitators:

<table>
<thead>
<tr>
<th>Nancy Smith</th>
<th>Beth Young</th>
<th>Mark Blevins</th>
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<tr>
<td>National Center for Education Statistics</td>
<td>Quality Information Partners, Inc.</td>
<td>AEM Corporation</td>
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<td>703-218-1865</td>
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PESC's EA2 Task Force, now meeting on the first Thursday of each month, agreed at its last meeting to form 3 new workgroups. The 3 new workgroups will meet at PESC's upcoming Spring 2010 Data Summit:

**Workgroup 1 – Student Aid Outreach**
There is significant interest in the strategic direction of FSA with regard to authentication due to the fact that a student's first experience in higher education is through access and completion of the FAFSA - Free Application for Federal Student Aid. Many have requested PESC to take the lead to open communications with FSA and hold a series of meetings to ensure transparency and collaboration.

**Workgroup 2 – SAML Attribute Registry**
Those working in higher education authentication, including the InCommon Federation, have indicated that the time is right to start discussions on how PESC would support a SAML attribute registry. This workgroup will focus on establishment of a registry as well as establishing standards for attribute passing for various applications.

**Workgroup 3 – Education & Deployment Toolkit**
Many at PESC's Fall 2009 Data Summit requested the establishment of a centralized clearinghouse that would contain educational materials, an authentication deployment toolkit, and house all other relative information to help make it simpler for folks to find out more information on authentication. The group also proposed development of 2-3 white papers on EA2 activities in higher education, work on extending Federated IdM into pilot applications, and seeking grant funding for research or implementation activities.

Representatives from PESC member organizations that are interested in participating in any of these workgroups should contact Michael Sessa at michael.sessa@pesc.org. Each workgroup will also be lead by a chair or co-chairs. The EA2 is also interested in anyone able to serve as chair or co-chair.

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**PESC Board of Directors Nomination Period Now Open**

Please be advised that the nomination period for the PESC Board of Directors is now open. Representatives from MEMBER organizations (with dues paid current) are eligible to serve on the Board of Directors. The term of service is two years and runs July 1, 2010 – June 30, 2012. As terms of service are staggered on the Board of Directors, elections will be for six seats (total number of seats is 13). Nominations should be made with the attached form and submitted to Michael Sessa at michael.sessa@pesc.org. When nominating, please ensure that the nominee is aware that a nomination is being made.

Elections will be held during PESC’s 12th Annual Membership Meeting scheduled for Thursday April 1, 2010 from 5:30 pm – 6:30 pm EDT at the Hyatt Regency Washington on Capitol Hill (400 New Jersey Ave NW, Washington DC). Membership meetings are open to all PESC Members and Affiliates, and with prior notification, other interested parties.

Board members can expect to volunteer no more than 10 hours per month. A Manual of Roles and Responsibilities is also available online and provides more detail about the PESC Board of Directors [http://www.pesc.org/interior.php?page_id=93](http://www.pesc.org/interior.php?page_id=93).

The schedule for elections will be as follows:

**Wednesday March 10, 2010**
- Nominations Open

**Friday March 19, 2010**
- Nominations Closed, Proxy Ballots Issued

**Monday March 29, 2010**
- If not attending the Membership Meeting in person, this is the date by which Proxy Ballots must be received in PESC’s offices

**Thursday April 1, 2010**
- Elections held ~ 5:30pm EDT

NOTE: If attending the 12th Annual Membership Meeting in person, Proxy ballots can still be submitted and then can either be replaced with an official vote on Thursday April 1, 2010 or remain as the official vote.
NOMINATION FORM

PESC BOARD OF DIRECTORS

Elections to be held:
12th Annual Membership Meeting
April 1, 2010
5:30 pm – 6:30 pm EDT
Hyatt Regency Washington on Capitol Hill
400 New Jersey Avenue NW
Washington, D.C. 20001

Nominee Full Name

Nominee Title and Organization

Street Address

City, State and Zip

Phone           Fax           E-mail Address

Please complete this form, attach a brief BIO of the nominee, and return both to PESC by close of business on Friday March 19, 2010:

Postsecondary Electronic Standards Council
1250 Connecticut Avenue NW
Suite 200
Washington DC 20036
Fax: 202-261-6517
Email: Michael.Sessa@PESC.org

WWW.PESC.ORG
The XML candidates that support Graduation Rates (2 year, less than 2 year, and 4 year) for IPEDS – Integrated Postsecondary Education Data System are presented by the Standards Forum for Education to the Members of the Postsecondary Electronic Standards Council (PESC) for vote as official PESC Approved Education Community Standards. Please indicate your vote by checking one of the boxes below and submitting your ballot to PESC:

☐ APPROVE

☐ NOT APPROVE

If not approved, please indicate reason(s) below. Attach more sheets if necessary:

___________________________
Your Name:

___________________________
Your Organization:

___________________________
Date:

All ballots must be received by PESC by 5pm PDST Tuesday March 16, 2010.
# Testimonial Authorization

Please use this form to list your organization’s testimonial of a PESC activity or event. Testimonials will be included in press releases and announcements and posted on the PESC website when a specific PESC activity or event is occurring (e.g. when a new standard is announced, etc.) and may be used subsequently in additional marketing. PESC member organizations can also provide a general testimonial of PESC which will be posted on the PESC website and may be used for general marketing purposes.*

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**TESTIMONIAL OF** (check all that apply):

- Newly Approved PESC Standard
- General Endorsement of PESC
- Other: _____________________

**EXACT CONTACT INFORMATION:**

- Person Full Name
- Title
- Organization

**EXACT TESTIMONIAL:** (attach more pages if needed)

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I hereby grant the Postsecondary Electronic Standards Council (PESC) non-exclusive, royalty-free, irrevocable, world-wide authorization to reproduce and distribute to the general public, without charge, the above-listed testimonial in hard copy, digital or any other format, including but not limited to distribution on the internet, via CD-ROM and inclusion in electronic databases. I also authorize PESC and its membership organizations to reproduce and distribute copies of this testimonial, without charge, to other persons in their offices, firms or at the institutions of higher education that they represent, provided that they include in the copies any credits, acknowledgements, copyright notice, and other such information contained in the materials. I retain all other rights in and to the materials, including copyright therein.

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<th>Contact Person Signature</th>
<th>Date</th>
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</table>

* Please complete this form and send it along to:

Postsecondary Electronic Standards Council
1250 Connecticut Avenue, NW, Suite 200
Washington DC 20036
Fax: 202-261-6517
Email: Michael.Sessa@PESC.org

* Testimonials will only be listed and/or maintained for PESC member organizations in good standing.
PESC Members Vote on IPEDS Graduation Rates

With the development work and public comment period now completed on IPEDS Graduation Rates (2 year, less than 2 year, and 4 year), IPEDS Graduation Rates are now being presented to PESC members for a vote. All documentation regarding IPEDS Graduation Rates is posted at http://www.pesc.org/interior.php?page_id=207.

In order to be approved as a PESC standard, 80% of votes cast by Members must be favorable. Ballots, attached, have been issued to Members and votes must be submitted back to the PESC office (email, fax, or mail) by 5pm PDST on Tuesday March 16, 2010.

In anticipation of a favorable vote, we are also distributing Testimonial Forms which can be used by your organization to show its support for IPEDS and PESC. Testimonials will be included in the public announcements once the standard is approved and will be posted on the PESC website. This service provides your organization the opportunity to express its dedication to interoperability and to the general education community at large, and is offered free of charge as a benefit of PESC membership.

12th Annual PESC Membership Meeting

Please be advised that the next meeting of the PESC membership will take place at 5:30pm on Thursday April 1, 2010 at the Hyatt Regency Washington during PESC’s Spring 2010 Data Summit. Membership meetings are open to all PESC Members and Affiliates, and with prior notification, other interested parties. The agenda will include elections for the PESC Board of Directors and updates on PESC initiatives, workgroups, and finances. Nominations for the PESC Board of Directors are open now. For any person interested or looking to learn about Board roles and responsibilities, please download the Board Manual of Roles and Responsibilities located on the PESC website under "About Us" and "Board."

PESC Spring 2010 Data Summit

Thursday April 1, 2010 – Friday April 2, 2009
Hyatt Regency Washington on Capitol Hill
400 New Jersey Ave., NW
Washington, D.C. 20001
202.737.1234
800.233.1234
Group Rate: $209
Group Name: PESC

USC Needs Your Help

The University of Southern California is in the process of building its XML transcript transaction set and is looking to contact other schools who are actively engaged in XML transcript data exchange over the University of Texas at Austin server or elsewhere. If your institution fits the bill, USC would like to hear from you. Please contact Matt Bemis, Associate Registrar, at wbemis@usc.edu.

Obama Tries New Tack to Collect Student Data

From the Chronicle of Higher Education 2/21/2010
By Paul Basken

The Obama administration is opening a new campaign to persuade states of their full legal rights to develop and use student-records databases, after stalling in its bid to write new privacy rules that would make those rights unambiguous.

The effort is central to the president's education agenda, which seeks to inject more accountability into higher education through smarter use of data. But like his predecessors, Mr. Obama has quickly hit opposition to his desire to track the performance of individual students, a goal that raises legal and political red flags related to student privacy.

The U.S. Education Department strategy includes the creation this month of a panel of government and private-sector experts who will spend the next two months developing guidelines for how states can compile databases of student records in accordance with federal law.
The approach reflects a growing realization, after months of analysis by Education Department lawyers, that Congressional obstacles to student-records collection can't be fully overcome by favorable interpretations of federal student-privacy laws or revisions in existing regulations, experts said.

"If Congress really thinks this needs to be done, statutorily they could address this," said LeRoy Rooker, a former director of student-privacy policies at the Education Department, of the drive to create comprehensive student databases.

"But all the indications from Congress are 'You can't do this; we don't want you doing this,'" said Mr. Rooker, who served 21 years, until early last year, as director of the department's Family Policy Compliance Office.

State and federal policy makers from both political parties have been pushing for interconnected student and workplace databases, saying they are critical to improving the quality of education from kindergarten through college.

Such advocates have been hampered both by institutions, often private colleges, that predict violations of student-privacy rights, and by state officials uncertain of their legal flexibility.

That uncertainty largely focuses on the terms and interpretations of the Family Educational Rights and Privacy Act of 1974, or Ferpa, which bans colleges from disclosing education records without the consent of the student.

President George W. Bush's administration aggressively promoted the idea of creating a single national database that would cover students from elementary school through career employment. Administration officials spoke of a world in which comprehensive records of individual students would give everyone—prospective students, faculty members, administrators, and policy makers—a fully detailed understanding of teacher and institutional performance.

Even though the unit-record systems proposed by the Obama administration and others would mean compiling individual performance records on students and workers, it would protect their privacy by allowing the release of only those data that describe large groups of people in a particular field or institution, without giving any information that might pinpoint a single individual, advocates have said.

But Congress, which was lobbied by private colleges and others who cited concerns about Ferpa, approved legislation in 2008 that barred any such system on the national level. Congress has instead been allocating money for the Education Department to encourage states to build their own systems.

Optimistic About Data

Obama-administration officials shared the Bush administration's goal of improving education through expanded student-data collection, and came to office optimistic they could achieve much of their predecessors' underlying objectives by working with the states.

Last September at a Capitol Hill event organized by the Data Quality Campaign, a coalition of state-based groups that is spearheading the student-data approach, administration officials gave an optimistic and even aggressive assessment of their chances.

Those officials included Carmel Martin, assistant secretary of education in charge of policy development, who said that department lawyers were "spending a lot of time looking at the law and determining just how much of the barriers that are perceived with respect to Ferpa are truly barriers."

"There's a sense that there might be some misperception about what the law requires," said Ms. Martin, who was an aide to the late Sen. Edward M. Kennedy when the Massachusetts Democrat was chairman of the Senate's education committee.

Jane Oates, an assistant secretary of labor who also worked for Senator Kennedy, said Social Security numbers would have to be used at some level, at least inside protected computer systems, because companies won't accept the hassle of being asked to use a second set of identifying numbers.

"I don't know why people are so afraid," Ms. Oates said, noting that most colleges already use a common nationwide database that stores student Social Security numbers for the purposes of tracking financial-aid eligibility. "The higher-education community, this is one where they need to take off the armor."

But months later, the department still has not produced any legal strategy, leaving key allies frustrated and
seeking alternative approaches for widening the use of student-records databases.

The Data Quality Campaign is making plans to convene by next month its own expert group for advising states on legal strategies for assembling databases within the confines of existing law.

Aimee R. Guidera, the Data Quality Campaign's director, said the group had been waiting for the department's legal strategy but has now decided to go ahead and "tell states what they should be thinking about."

One of the most formidable legal obstacles, Ms. Guidera said, is a 2003 memorandum in which William D. Hansen, then deputy secretary of education, told state education officials they could not share student data with their states' labor agencies.

Some state agencies wanted that sharing authority so they could monitor the success of federal education and job-training programs. Federal officials refused the states' requests at a time, Ms. Martin said, when "you couldn't envision the types of data systems that we're talking about now, or the different types of mechanisms for protecting student privacy."

And guidance such as that given by Mr. Hansen seven years ago, once it's in effect long enough to be regarded as legally binding, is not easily rewritten by subsequent administrations, said Mr. Rooker, the former director of student-privacy policies.

State Models

One of the states being most aggressive about building a system of data on student and job performance is Nebraska, which has tried to work within the 2003 memo's restrictions by having its education agency receive employment data from its labor agency, rather than the reverse.

The federal Education Department's guidance process seemed unnecessarily lengthy and complicated, said Carna Pfeil, associate director of the Nebraska Coordinating Commission for Postsecondary Education. After a year of reviews, however, Mr. Rooker's office in 2004 approved a system in Nebraska that both protects students' rights and generates useful information, Ms. Pfeil said.

In cases where the Nebraska Department of Labor wants to generate its own research reports, the state higher-education agency gives it student data using substitute identification numbers, Ms. Pfeil said. All reports issued publicly are stripped of any information that could identify an individual student, she said.

Those reports allow people like Donna Kuskie, a training specialist with the Nebraska Department of Labor, to help other people make decisions about colleges and job training. Ms. Kuskie said she recently used such data to help a man who had lost his job, after years in the same field, decide how to get retrained.

After reviewing the statistics showing what colleges and which programs led most successfully to which jobs, Ms. Kuskie said she guided the man toward an associate-degree program in elementary education, beginning at Western Nebraska Community College.

The report data also help her when she speaks at orientation events for new college students, Ms. Kuskie said. A colleague said she uses the data to help attract companies to the state by showing them the training level of the local work force.

The U.S. Education Department has suggested the Nebraska model to other states, Mr. Rooker said. Mr. Rooker's successor, Paul Gammill, said he agrees with the overall strategy, even though he believes the administration may have been too aggressive in some instances. The controversies are often legally complicated, he said, involving detailed explorations of such questions as what exactly defines the borders of authority between one state agency and another, who is a legally recognized agent acting on behalf of that agency, and what exactly constitutes a student record, or a portion of a student record, that can or cannot be shared.

Mr. Gammill said his words of caution about the specific legal restrictions of Ferpa led to his dismissal last month by the Obama administration, even though he has repeatedly endorsed the underlying goal of establishing comprehensive student-record systems.

"I simply made comments on things, such as, 'Here's a concern you should consider;',' said Mr. Gammill, who in past controversies has criticized universities for being too protective of students' rights. "It wasn't like I was out there beating the drums on things."

An Education Department spokesman said he couldn't comment on the factors leading to Mr. Gammill's dismissal.
The department's formation of the task force to look at the legal issues related to student-records databases, however, might be an opening to finding common ground, said Sarah A. Flanagan, vice president for government relations at the National Association of Independent Colleges and Universities, which has repeatedly warned about privacy risks from student-data systems.

The task force, if "balanced and transparent," would be welcome, Ms. Flanagan said. "For it to succeed, it can't be loaded with those who think unlimited data collection is the holy grail of educational reform." Education Department officials have not publicly named the members of the task force.

Limited Success

So far, Ms. Guidera concedes, the Education Department's efforts to encourage states to adopt models it considers workable, such as the approach in Nebraska, have had limited success nationwide.

She described a situation in which state officials, uncertain of their rights on a particular aspect of their database, write to the U.S. Education Department seeking clarification. The department may take months to answer a single question from a single state, she said, and its answers for one state can sometimes raise new uncertainties in another state, triggering further long cycles of questions and answers.

Even more problematic for the long-term vision of data-collection advocates, however, is the simple fact that Congress explicitly banned a national system.

Congress is encouraging states to build their own systems, and some lawmakers even support connections among those state systems. But the ban on a "national" system is posing a legal barrier to any state's giving its raw student data to another state, Mr. Rooker said, blocking the interstate combining of records seen as essential to generating worthwhile data in a time when people routinely cross state lines for colleges and jobs.

The confusion has left even allies wondering how the Obama administration hopes to move forward. "That's not clear to me, or clear to other folks that I've been talking to," said Hans P. L'Orange, vice president for research and information resources at the State Higher Education Executive Officers group, a managing partner of the Data Quality Campaign.

"There's still a great deal of confusion out there," Ms. Guidera said.

Community Colleges Explore National Collaboration to Fight For-Profit Marketing Machine

From the Chronicle of Higher Education 02/22/2010

By Marc Parry

Individual community colleges can’t match the marketing budgets of for-profit institutions that plaster their regions with advertisements. So they’re exploring ways to fight back by going national, pooling their efforts to promote online programs in a new marketing collaboration that was announced Sunday at a distance-education conference here.

The discussions, led by the American Association of Community Colleges, represent a fresh spin on an older strength-in-numbers distance-learning vision called the International Community College, which failed to get off the ground after four years of planning.

The distance-education landscape has changed drastically since that telecourse project. Both for-profits and an increasingly aggressive group of traditional four-year colleges now often recruit by purchasing "leads" on potential students that are parcelled out by online portals – a game community colleges have generally not joined.

The new national collaboration might look at how community colleges could exploit that tactic, perhaps by putting up a lead-generation Web site, said Pamela K. Quinn, an association board member who is provost of the distance-learning arm of the Dallas County Community College District. Planning is at an early stage, she said, but one outcome could be an online clearinghouse that could showcase programs that train workers for particular jobs – say, veterinary technician. The project would cost “millions,” Ms. Quinn said in an interview Sunday at an e-learning conference put on by the Instructional Technology Council, an affiliate of the national community college umbrella group.

Institutions participating in the talks include the Dallas district, Foothill-De Anaza Community College, Rio Salado Community College, and Northern Virginia Community College.
For-profits have chased community-college students for years, and the financial power they bring to the competition is daunting. For the three-month period ending November 30, 2009, the Apollo Group, parent of the University of Phoenix, spent $275-million on "selling and promotional" expenses, or about 20 percent of its total net revenue of $1.3-billion for that quarter, according to a report the company submitted to the government. To put that in perspective, the Dallas district’s distance-learning marketing budget is about $150,000.

Ms. Quinn sees how that lopsided competition plays out locally – for example, in the case of her husband’s barber. He got sold on a for-profit without exploring cheaper local online options.

“He just didn’t even know what was available five miles from him, and yet he knew what’s available on the national scene,” she said. “I don’t think anybody who wants to be active in the future can afford to not pay attention to how successful some of the for-profits are becoming.”

She added, “We want to make sure students understand their options and aren’t going into debt to get a degree. There are probably a lot of people out there that don’t know what their options are, and they’ve been very impressed with some of the very fancy glitzy advertising that’s out there.”

A group of representative stakeholders is working with the U.S. Department of Education to develop the model standards. The State Higher Education Executive Officers (SHEEO) and the Council of Chief State School Officers (CCSSO) have been funded by the Bill and Melinda Gates Foundation in a three-year project to promote communication efforts and voluntary adoption of the common data standards currently being developed.

We look forward to working with all our colleagues and welcome your questions, comments, and counsel as this important work proceeds. More information will be forthcoming from us and our partners as the technical development proceeds and the advocacy, communication and adoption efforts begin. Please contact me or Hans L’Orange (hlorange@sheeo.org) with your questions and input to the project.

Paul E. Lingenfelter
President
State Higher Education Executive Officers

Transforming American Education:
Learning Powered by Technology
National Educational Technology Plan

On March 5, 2010 the Office of Education Technology under the Office of the Secretary of the US Department of Education released the first draft of its National Educational Technology Plan. The Executive Summary is attached to this edition of The Standard while the full report can be accessed from the homepage of the PESC website.

Common Data Standards
(continued from page 1)

At the annual NCES MIS Conference held in Phoenix the first week of March, the Technical Work Group (TWG) released a corresponding communication piece identifying the scope and purpose of the TWG along with a timeline for deliverables and action items and a Powerpoint presentation (both attached). The TWG has also been meeting regularly over the past few months and is establishing four subcommittees: governance, postsecondary, technical, and use case. PESC is participating in all workgroups and subcommittees.
CDS is Building a Voluntary Common Vocabulary

Common Data Standards Initiative
Developing initial **key subset of K-12 student & teacher elements**, and **key K12-to-postsecondary transition elements**.

The CDS Initiative will:

- identify variables that all states need to define the same way in order to increase interoperability and comparability;
- develop common definitions, code sets, business rules; and
- develop technical specifications.

These will either be drawn/adapted from existing standards sources **OR** developed from scratch.
Why Do We Need ‘em?

Because students are mobile and transcripts must be easily and readily available.

Sometimes this mobility is predictable:
• transitions from elementary → middle → high school → postsecondary

Sometimes mobility catches us by surprise:
• Families move frequently: receiving schools must know which services to provide and in which courses to place new students.
• Hurricane Katrina displaced thousands; records were needed – *fast*.
Because lack of standardization...

...across SEAs and LEAs hampers our ability to share data and make valid comparisons of student performance.

...across K-12 and postsecondary sectors makes it cumbersome to exchange student-level data with state public higher education entities.
Why Do We Need ‘em?

So, use of common data standards can:

- Increase *comparability* of data across state lines, allowing us to draw valid comparisons
- Increase *interoperability* and *portability* of data within K-12, across SEAs, and with the postsecondary sector
- Reduce collection *burden* on districts
CDS is NOT...

Required: Adoption of any or all of the CDS standards is *entirely voluntary*.

A data collection: CDS does not collect data.

A Federal unit record system: CDS is a model for data standardization to enable sharing between state systems.

Solely a USED undertaking: CDS is a collaborative effort including SEAs, LEAs, IHEs, and national organizations.
• The *Education Science Reform Act of 2002* gave NCES the authority to determine voluntary standards and guidelines to assist State educational agencies in developing SLDSs.

• The *American Recovery and Reinvestment Act of 2009* provided $250 million in competitive grants to help states implement and use SLDSs that include not only education data for elementary and secondary students, but also early childhood, postsecondary, and workforce information.
Who?

Technical Working Group
- NCES Forum
- 4 SEAs (+2 alternates)
- 4 LEAs
- 4 Higher Education
- SIF Association
- PESC
- DQC
- CCSSO
- SHEEO
- NCES Postsecondary Studies
- USED (NCES, OPEPD, OII)

Communications & Adoption
- Bill & Melinda Gates Foundation
  - SHEEO
  - CCSSO
- Michael & Susan Dell Foundation
  - DQC
# Technical Working Group

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<tbody>
<tr>
<td>Kathy Gosa, KS</td>
<td>Jim Campbell, SIF Association</td>
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<td>Bethann Canada, VA</td>
<td>Michael Sessa, PESC</td>
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<td>Patricia Sullivan, TX</td>
<td>Hans L’Orange, SHEEO</td>
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<td>Patsy Eiland, AL</td>
<td>Alex Jackl, CCSSO</td>
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<td>Tom Ogle, MO*</td>
<td>Charles McGrew, DQC</td>
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<td>Bruce Dacey, DE*</td>
<td>Ross Santy, USED-OPEPD</td>
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<td>Linda Rocks, LA</td>
<td>Kwasi Asare, USED-OII</td>
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<td>Tom Purwin, NJ</td>
<td>Lee Hoffman, USED-NCES</td>
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<td>David Weinberger, NY</td>
<td>Jessica Shedd, USED-NCES Postsecondary</td>
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<td>Bill Smith, SD</td>
<td>Tom Weko, USED-NCES Postsecondary</td>
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<td>Patrick Perry, HE CA</td>
<td>Corey Chatis, Gates Foundation</td>
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<td>Keith Brown, HE NC</td>
<td>Ian Christopher, Michael &amp; Susan Dell Foundation</td>
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<td>Diane Sherman, HE AL</td>
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<td>Ken Sauer, HE IN</td>
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*Alternates

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**Contractors:**

- Beth Young, Quality Information Partners
- Mark Blevins, AEM Corporation
Year 1: Technical Working Group (TWG) will:

- Establish Initiative’s scope and identify initial list of K-12 and K12-to-postsecondary transition variables
- Agree on definitions, codes sets, business rules, and technical specifications for each element
- Solicit feedback and buy-in by sharing standards with broader partnership
- Produce deliverables, including:
  - a list of elements with thoroughly documented definitions, code sets, and business rules
  - detailed technical specifications for each variable (e.g., XML schema, machine readable format, etc.)
  - documentation of governance process for maintenance and expansion of common data standards:
    » Who is engaged?
    » What are roles and responsibilities of each type of stakeholder?
    » How often are common data standards reviewed, expanded, and considered for sunset?

Year 2: TWG will discuss expansion of K-12 and K12-to-postsecondary transition variables and consider expansion into early learning and/or workforce.

Year 3: TWG will review existing standards for possible expansion, adjustments, or sunset.
**TWG Timeline: Year 1**

**Early March:** Presentations; document variables, definitions, code sets

**March:** Draft business rules for key variables; introduce technical contractor; Open a forum to receive feedback and comments from outside TWG

**May:** Document business rules for key variables

**June:** Document common data standards, without technical specifications

**July:** Presentation materials and documentation; draft ongoing governance procedures

**August:** Draft technical specifications documents

**September:** Finalize technical specifications documents
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<tr>
<th>CDS #</th>
<th>Element</th>
<th>&quot;Group&quot;</th>
<th>Element Definition</th>
<th>Code Set</th>
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<td>1</td>
<td>First Name</td>
<td>Name</td>
<td>A name given to an individual at birth, baptism, or during another naming ceremony, or through legal change.</td>
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<td>Middle Name</td>
<td>Name</td>
<td>A secondary name given to an individual at birth, baptism, or during another naming ceremony.</td>
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<td>3</td>
<td>Last/Surname</td>
<td>Name</td>
<td>The name borne in common by members of a family.</td>
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<td>4</td>
<td>Generation Code/Suffix</td>
<td>Name</td>
<td>An appendage, if any, used to denote an individual’s generation in his family (e.g., Jr., Sr., III).</td>
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<td>5</td>
<td>Other Name</td>
<td>Other Name</td>
<td>Previous, alternate or other names or aliases associated with the student.</td>
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<td>6</td>
<td>Identification Code (Student)</td>
<td>ID</td>
<td>A unique number or alphanumeric code assigned to a student by a school, school system, a state, or other agency or entity.</td>
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|       | Identification System (Student) | ID | A coding scheme that is used for identification and record-keeping purposes by schools, social services, or other agencies to refer to a student. | 1. Canadian Social Insurance Number  
2. District-assigned number  
3. Family unit number  
4. Federal identification number  
5. National migrant number  
6. Other  
7. School-assigned number  
8. Social Security Administration number  
9. State-assigned number  
10. State migrant number |
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Transforming American Education:
Learning
Powered by Technology

DRAFT
National Educational Technology Plan 2010
Executive Summary

March 5, 2010

Office of Educational Technology
U.S. Department of Education
Executive Summary

Education is the key to America’s economic growth and prosperity and to our ability to compete in the global economy. It is the path to good jobs and higher earning power for Americans. It is necessary for our democracy to work. It fosters the cross-border, cross-cultural collaboration required to solve the most challenging problems of our time.

Under the Obama administration, education has become an urgent priority driven by two clear goals. By 2020,

• We will raise the proportion of college graduates from where it now stands [39%] so that 60% of our population holds a 2-year or 4-year degree.

• We will close the achievement gap so that all students – regardless of race, income, or neighborhood – graduate from high school ready to succeed in college and careers.

These are aggressive goals and achieving them is a sizable challenge. Add to the challenge the projections of most states and the federal government of reduced revenues for the foreseeable future, and it is clear we need cost-effective and cost-saving strategies that improve learning outcomes and graduation rates for millions of Americans.

Specifically, we must embrace innovation, prompt implementation, regular evaluation, and continuous improvement. The programs and projects that work must be brought to scale so every school has the opportunity to take advantage of that success. Our regulations, policies, actions, and investments must be strategic and coherent.

Transforming American Education

To achieve these goals, the National Educational Technology Plan (NETP) calls for revolutionary transformation rather than evolutionary tinkering. It urges our education system at all levels to

• Be clear about the outcomes we seek.

• Collaborate to redesign structures and processes for effectiveness, efficiency, and flexibility.

• Continually monitor and measure our performance.

• Hold ourselves accountable for progress and results every step of the way.

Just as technology is at the core of virtually every aspect of our daily lives and work, we must leverage it to provide engaging and powerful learning experiences, content, and resources and assessments that measure student achievement in more complete, authentic, and meaningful ways. Technology-based learning and assessment systems will be pivotal in improving student learning and generating data that can be used to continuously improve the education system at all levels. Technology will help us execute collaborative teaching strategies combined with professional learning that better prepare and enhance educators’ competencies and expertise over the course of their careers. To shorten our learning curve, we can learn from other kinds of enterprises that have used technology to improve outcomes while increasing productivity.
A 21st Century Model of Learning Powered by Technology

The NETP presents a model of 21st century learning powered by technology, with goals and recommendations in five essential areas: learning, assessment, teaching, infrastructure, and productivity. The plan also identifies far-reaching “grand challenge problems” that should be funded and coordinated at a national level.

The challenging and rapidly changing demands of our global economy tell us what people need to know and who needs to learn. Advances in learning sciences show us how people learn. Technology makes it possible for us to act on this knowledge and understanding.

Learning

The model of 21st century learning described in this plan calls for engaging and empowering learning experiences for all learners. The model asks that we focus what and how we teach to match what people need to know, how they learn, where and when they will learn, and who needs to learn. It brings state-of-the-art technology into learning to enable, motivate, and inspire all students, regardless of background, languages, or disabilities, to achieve. It leverages the power of technology to provide personalized learning instead of a one-size-fits-all curriculum, pace of teaching, and instructional practices.

Many students’ lives today are filled with technology that gives them mobile access to information and resources 24/7, enables them to create multimedia content and share it with the world, and allows them to participate in online social networks where people from all over the world share ideas, collaborate, and learn new things. Outside school, students are free to pursue their passions in their own way and at their own pace. The opportunities are limitless, borderless, and instantaneous.

The challenge for our education system is to leverage the learning sciences and modern technology to create engaging, relevant, and personalized learning experiences for all learners that mirror students’ daily lives and the reality of their futures. In contrast to traditional classroom instruction, this requires that we put students at the center and empower them to take control of their own learning by providing flexibility on several dimensions. A core set of standards-based concepts and competencies should form the basis of what all students should learn, but beyond that students and educators should have options for engaging in learning: large groups, small groups, and work tailored to individual goals, needs, interests, and prior experience of each learner. By supporting student learning in areas that are of real concern or particular interest to them, personalized learning adds to its relevance, inspiring higher levels of motivation and achievement.

In addition, technology provides access to more learning resources than are available in classrooms and connections to a wider set of “educators,” including teachers, parents, experts, and mentors outside the classroom. On-demand learning is now within reach, supporting learning that is life-long and life-wide (Bransford et al., 2006).

What and How People Need to Learn

Whether the domain is English language arts, mathematics, sciences, social studies, history, art, or music, 21st century competencies and expertise such as critical thinking, complex problem solving, collaboration, and multimedia communication should be woven into all content areas. These competencies are necessary to become expert learners, which we all must be if we are to adapt to our rapidly changing world over the course of our lives, and that involves developing deep understanding within specific content areas and making the connections between them.
How we need to learn includes using the technology that professionals in various disciplines use. Professionals routinely use the web and tools such as wikis, blogs, and digital content for the research, collaboration, and communication demanded in their jobs. They gather data and analyze it using inquiry and visualization tools. They use graphical and 3D modeling tools for design. For students, using these real-world tools creates learning opportunities that allow them to grapple with real-world problems – opportunities that prepare them to be more productive members of a globally competitive workforce.

Assessment

The model of 21st century learning requires new and better ways to measure what matters, diagnose strengths and weaknesses in the course of learning when there is still time to improve student performance, and involve multiple stakeholders in the process of designing, conducting, and using assessment. In all these activities, technology-based assessments can provide data to drive decisions on the basis of what is best for each and every student and that in aggregate will lead to continuous improvement across our entire education system.

President Obama has called on our nation’s governors and state education chiefs to develop standards and assessments that measure 21st century competencies and expertise – critical thinking, complex problem solving, collaboration, and multimedia communication – in all content areas. Technology-based assessments that combine cognitive research and theory about how students think with multimedia, interactivity, and connectivity make it possible to directly assess these types of skills. And we can do so within the context of relevant societal issues and problems that people care about in everyday life.

When combined with learning systems, technology-based assessments can be used formatively to diagnose and modify the conditions of learning and instructional practices while at the same time determining what students have learned for grading and accountability purposes. Both uses are important, but the former can improve student learning in the moment (Black & William, 1998; Black et al., 2004). Furthermore, systems can be designed to capture students’ inputs and collect evidence of their knowledge and problem solving abilities as they work. Over time, the system “learns” more about students’ abilities and can provide increasingly appropriate support.

Using Data to Drive Continuous Improvement

With assessments in place that assess the full range of expertise and competencies reflected in standards, student learning data can be collected and used to continually improve learning outcomes and productivity. For example, such data could be used to create a system of interconnected feedback for students, educators, parents, school leaders, and district administrators.

For this to work, relevant data must be made available to the right people at the right time and in the right form. Educators and leaders at all levels of our education system also must be provided with support – tools and training – that can help them manage the assessment process, analyze data, and take appropriate action.
Teaching

Just as leveraging technology can help us improve learning and assessment, the model of 21st century learning calls for using technology to help build the capacity of educators by enabling a shift to a model of connected teaching. In such a teaching model, teams of connected educators replace solo practitioners and classrooms are fully connected to provide educators with 24/7 access to data and analytic tools as well as to resources that help them act on the insights the data provide.

The expectation of effective teaching and accountability for professional educators is a critical component of transforming our education system, but equally important is recognizing that we need to strengthen and elevate the teaching profession. This is necessary if we are to attract and retain the most effective educators and achieve the learning outcomes we seek. Just as leveraging technology can help us improve learning and assessment, technology can help us build the capacity of educators by enabling a shift to a model of connected teaching.

In a connected teaching model, connection replaces isolation. Classroom educators are fully connected to learning data and tools for using the data; to content, resources, and systems that empower them to create, manage, and assess engaging and relevant learning experiences; and directly to their students in support of learning both inside and outside school. The same connections give them access to resources and expertise that improve their own instructional practices and guide them in becoming facilitators and collaborators in their students’ increasingly self-directed learning.

In connected teaching, teaching is a team activity. Individual educators build online learning communities consisting of their students and their students’ peers; fellow educators in their schools, libraries, and afterschool programs; professional experts in various disciplines around the world; members of community organizations that serve students in the hours they are not in school; and parents who desire greater participation in their children’s education.

Episodic and ineffective professional development is replaced by professional learning that is collaborative, coherent, and continuous and that blends more effective in-person courses and workshops with the expanded opportunities, immediacy, and convenience enabled by online environments full of resources and opportunities for collaboration. For their part, the colleges of education and other institutions that prepare teachers play an ongoing role in the professional growth of their graduates throughout the entire course of their careers.

Connected teaching enables our education system to provide access to effective teaching and learning resources where they are not otherwise available and provide more options for all learners at all levels. This is accomplished by augmenting the expertise and competencies of specialized and exceptional educators with online learning systems and through on-demand courses and other self-directed learning opportunities. Clearly, more teachers will need to be expert at providing online instruction.

21st Century Resources for Professional Educators

The technology that enables connected teaching is available now, but not all the conditions necessary to leverage it are. Many of our existing educators do not have the same understanding of and ease with using technology that is part of the daily lives of professionals in other sectors. The same can be said of many of the education leaders and policymakers in schools, districts, and states and of the higher education institutions that prepare new educators for the field.
Transforming American Education: Learning Powered by Technology - Executive Summary

This gap in technology understanding influences program and curriculum development, funding and purchasing decisions about educational and information technology in schools, and pre-service and in-service professional learning. This gap prevents technology from being used in ways that would improve instructional practices and learning outcomes.

Still, we must introduce connected teaching into our education system rapidly, and therefore we need innovation in the organizations that support educators in their profession – schools and districts, colleges of education, professional learning providers, and professional organizations.

Infrastructure

An essential component of the 21st century learning model is a comprehensive infrastructure for learning that provides every student, educator, and level of our education system with the resources they need when and where they are needed. The underlying principle is that infrastructure includes people, processes, learning resources, policies, and sustainable models for continuous improvement in addition to broadband connectivity, servers, software, management systems, and administration tools. Building this infrastructure is a far-reaching project that will demand concerted and coordinated effort.

Although we have adopted technology in many aspects of education today, a comprehensive infrastructure for learning is necessary to move us beyond the traditional model of educators and students in classrooms to a learning model that brings together teaching teams and students in classrooms, labs, libraries, museums, workplaces, and homes – anywhere in the world where people have access devices and an adequate Internet connection.

Over the past 40 years, we have seen unprecedented advances in computing and communications that have led to powerful technology resources and tools for learning. Today, low-cost Internet access devices, easy-to-use digital authoring tools, and the web facilitate access to information and multimedia learning content, communication, and collaboration. They provide the ability to participate in online learning communities that cross disciplines, organizations, international boundaries, and cultures.

Many of these technology resources and tools already are being used within our public education system. We are now, however, at an inflection point for a much bolder transformation of education powered by technology. This revolutionary opportunity for change is driven by the continuing push of emerging technology and the pull of the critical national need to radically improve our education system.

Always-on Learning Resources

Our model of an infrastructure for learning is always on, available to students, educators, and administrators regardless of their location or the time of day. It supports not just access to information, but access to people and participation in online learning communities. It offers a platform on which developers can build and tailor applications.

An infrastructure for learning unleashes new ways of capturing and sharing knowledge based on multimedia that integrate text, still and moving images, audio, and applications that run on a variety of devices. It enables seamless integration of in- and out-of-school learning. It frees learning from a rigid information transfer model (from book or educator to students) and enables a much more motivating intertwine of learning about, learning to do, and learning to be.
On a more operational level, an infrastructure for learning brings together and enables access to data from multiple sources while ensuring appropriate levels of security and privacy. It integrates computer hardware, data and networks, information resources, interoperable software, middleware services and tools, and devices and connects and supports interdisciplinary teams of professionals responsible for its development, maintenance, and management and its use in transformative approaches to teaching and learning.

**Productivity**

*To achieve our goal of transforming American education, we must rethink basic assumptions and redesign our education system. We must apply technology to implement personalized learning and ensure that students are making appropriate progress through our K-16 system so they graduate. These and other initiatives require investment, but tight economic times and basic fiscal responsibility demand that we get more out of each dollar we spend. We must leverage technology to plan, manage, monitor, and report spending to provide decision-makers with a reliable, accurate, and complete view of the financial performance of our education system at all levels. Such visibility is essential to meeting our goals for educational attainment within the budgets we can afford.*

Improving productivity is a daily focus of most American organizations in all sectors – both for-profit and nonprofit – and especially so in tight economic times. Education has not, however, incorporated many of the practices other sectors regularly use to improve productivity and manage costs, nor has it leveraged technology to enable or enhance them. We can learn much from the experience in other sectors.

What education can learn from the experience of business is that we need to make the fundamental structural changes that technology enables if we are to see dramatic improvements in productivity. As we do so, we should recognize that although the fundamental purpose of our public education system is the same, the roles and processes of schools, educators, and the system itself should change to reflect the times we live in and our goals as a world leader. Such rethinking applies to learning, assessment, and teaching processes, and to the infrastructure and operational and financial sides of running schools and school systems.

**Rethinking Basic Assumptions**

One of the most basic assumptions in our education system is time-based or “seat-time” measures of educational attainment. These measures were created in the late 1800s and early 1900s to smooth transitions from K-12 into higher education by translating high school work to college admissions offices (Shedd, 2003) and made their way into higher education when institutions began moving away from standardized curricula.

Another basic assumption is the way we organize students into age-determined groups, structure separate academic disciplines, organize learning into classes of roughly equal size with all the students in a particular class receiving the same content at the same pace, and keep these groups in place all year.

The last decade has seen the emergence of some radically redesigned schools, demonstrating the range of possibilities for structuring education. These include schools that organize around competence rather than seat time and others that enable more flexible
scheduling that fits students’ individual needs rather than traditional academic periods and lockstep curriculum pacing. In addition, schools are beginning to incorporate online learning, which gives us the opportunity to extend the learning day, week, or year.

The United States has a long way to go if we are to see every student complete at least a year of higher education or postsecondary career training. There is no way to achieve this target unless we can dramatically reduce the number of students who leave high school without getting a diploma and/or who are unprepared for postsecondary education.

A complex set of personal and academic factors underlie students’ decision to leave school or to disengage from learning, but support should start as early as possible, before children enter school, and should become intensified for those students who need it as they move through school. Practices supported with technology can help address the problem, including learning dashboards that keep students on track with their course requirements and earning credits for courses taken online.

Redesigning education in America for improved productivity is a complex challenge that will require all 50 states, the thousands of districts and schools across the country, the federal government, and other education stakeholders in the public and private sector coming together to design and implement innovative solutions. It is a challenge for educators – leaders, teachers, and policymakers committed to learning – as well as technologists, and ideally they will come together to lead the effort.

A Rigorous and Inclusive Process

The NETP, led by the Department of Education’s Office of Educational Technology, was developed using a rigorous and inclusive process built on the report of a technical working group of leading education researchers and practitioners.

In keeping with the White House’s Open Government Directive, the Department invited extensive public participation in the development of the NETP. Broad outreach efforts and state-of-the-art communications and collaboration technology enabled tens of thousands of individuals to learn about and contribute to the development of the NETP over its 9-month development period.

The Time To Act Is Now

The NETP accepts that we do not have the luxury of time – we must act now and commit to fine-tuning and midcourse corrections as we go. Success will require leadership, collaboration, and investment at all levels of our education system – states, districts, schools, and the federal government – as well as partnerships with higher education institutions, private enterprises, and not-for-profit entities.

In the United States, education is primarily a state and local responsibility. State and local public education institutions must ensure equitable access to learning experiences for all students and especially students in underserved populations – low-income and minority students, students with disabilities, English language learners, preschool-aged children, and others. States and districts need to build capacity for transformation. The Department of Education has a role in identifying effective strategies and implementation practices; encouraging, promoting, and actively supporting innovation in states and districts; and nurturing collaborations that help states and districts leverage resources so the best ideas can be scaled up.
Postsecondary education institutions – community colleges and 4-year colleges and universities – will need to partner more closely with K-12 schools to remove barriers to postsecondary education and put plans of their own in place to decrease dropout rates. Clearly, postsecondary institutions would be key players in the national R&D efforts recommended in this plan.

Education has long relied on the contributions of organizations in both the private and not-for-profit sectors, and this will not change.

As we enter the second decade of the 21st century, there has never been a more pressing need to transform American education and there will never be a better time to act. The NETP is a 5-year action plan that responds to an urgent national priority and a growing understanding of what the United States needs to do to remain competitive in a global economy.

**Goals and Recommendations**

The NETP presents five goals with recommendations for states, districts, the federal government, and other stakeholders in our education system that address learning, assessment, teaching, infrastructure, and productivity. The plan also identifies far-reaching grand challenge problems that should be funded and coordinated at a national level.

1.0 **Learning**

*All learners will have engaging and empowering learning experiences both in and outside of school that prepare them to be active, creative, knowledgeable, and ethical participants in our globally networked society.*

To meet this goal, we recommend the following actions:

1.1 Revise, create, and adopt standards and learning objectives for all content areas that reflect 21st century expertise and the power of technology to improve learning.

1.2 Develop and adopt learning resources that use technology to embody design principles from the learning sciences.

1.3 Develop and adopt learning resources that exploit the flexibility and power of technology to reach all learners anytime and anywhere.

1.4 Use advances in the learning sciences and technology to enhance STEM (science, technology, engineering, and mathematics) learning and develop, adopt, and evaluate new methodologies with the potential to enable all learners to excel in STEM.

2.0 **Assessment**

*Our education system at all levels will leverage the power of technology to measure what matters and use assessment data for continuous improvement.*

To meet this goal, we recommend the following actions:

2.1 Design, develop, and adopt assessments that give students, educators, and other stakeholders timely and actionable feedback about student learning to improve achievement and instructional practices.

2.2 Build the capacity of educators and educational institutions to use technology to improve assessment materials and processes for both formative and summative uses.
2.3 Conduct research and development that explore how gaming technology, simulations, collaboration environments, and virtual worlds can be used in assessments to engage and motivate learners and to assess complex skills and performances embedded in standards.

2.4 Revise practices, policies, and regulations to ensure privacy and information protection while enabling a model of assessment that includes ongoing student learning data gathering and sharing for continuous improvement.

3.0 Teaching

Professional educators will be supported individually and in teams by technology that connects them to data, content, resources, expertise, and learning experiences that enable and inspire more effective teaching for all learners.

To meet this goal, we recommend the following actions:

3.1 Design, develop, and adopt technology-based content, resources, and online learning communities that create opportunities for educators to collaborate for more effective teaching, inspire and attract new people into the profession, and encourage our best educators to continue teaching.

3.2 Provide pre-service and in-service educators with preparation and professional learning experiences powered by technology that close the gap between students’ and educators’ fluencies with technology and promote and enable technology use in ways that improve learning, assessment, and instructional practices.

3.3 Transform the preparation and professional learning of educators and education leaders by leveraging technology to create career-long personal learning networks within and across schools, pre-service preparation and in-service educational institutions, and professional organizations.

3.4 Use technology to provide access to the most effective teaching and learning resources, especially where they are not otherwise available, and to provide more options for all learners at all levels.

3.5 Develop a teaching force skilled in online instruction.

4.0 Infrastructure

All students and educators will have access to a comprehensive infrastructure for learning when and where they need it.

To meet this goal, we recommend the following actions:

4.1 Ensure that students and educators have adequate broadband access to the Internet and adequate wireless connectivity both inside and outside school.

4.2 Ensure that every student and educator has at least one Internet access device and software and resources for research, communication, multimedia content creation, and collaboration for use in and out of school.

4.3 Leverage open educational resources to promote innovative and creative opportunities for all learners and accelerate the development and adoption of new open technology-based learning tools and courses.

4.4 Build state and local education agency capacity for evolving an infrastructure for learning.

4.5 Support “meaningful use” of educational and information technology in states and districts by establishing definitions, goals, and metrics.
5.0 Productivity

*Our education system at all levels will redesign processes and structures to take advantage of the power of technology to improve learning outcomes while making more efficient use of time, money, and staff.*

To meet this goal, we recommend the following actions:

5.1 Develop and adopt a common definition of productivity in education and more relevant and meaningful measures of learning outcomes and costs.

5.2 Improve policies and use technology to manage costs including those for procurement.

5.3 Fund the development and use of interoperability standards for content, student learning data, and financial data to enable collecting, sharing, and analyzing data to improve decision-making at all levels of our education system.

5.4 Rethink basic assumptions in our education system that inhibit leveraging technology to improve learning, starting with our current practice of organizing student and educator learning around seat time instead of the demonstration of competencies.

5.5 Design, implement, and evaluate technology-powered programs and interventions to ensure that students progress through our K-16 education system and emerge prepared for the workplace and citizenship.

A New Kind of R&D for Education

To design and implement more efficient and effective education system, this plan calls for an organization with the mission of serving the public good through research and development at the intersection of learning sciences, technology, and education (Pea & Lazowska, 2003).

The Higher Education Act (P.L. 110-315) passed in August 2008 authorizes establishment of the National Center for Research in Advanced Information and Digital Technologies (also called the Digital Promise). Housed in the Department of Education, the center is authorized as a 501(c)3 that would bring together contributions from the public and private sectors to support the R&D needed to transform learning in America. The Digital Promise’s intent of involving private sector technology companies in precompetitive R&D with the center can be realized only if the federal government provides the funding that would demonstrate its own commitment to a major program of R&D addressing the complex problems associated with redesigning our education system.

The Defense Advanced Research Projects Agency (DARPA) offers an example of how such a research agency can promote work that builds basic understanding and addresses practical problems. DARPA sponsors high-risk/high-gain research on behalf of Department of Defense agencies, but it is independently managed and staffed by individuals from both industry and academia who are experts in the relevant research areas. DARPA program officers are given considerable discretion, both in defining the research agenda and making decisions about the funding and structuring of research (Cooke-Deegan, 2007).
In a similar manner, the National Center for Research in Advanced Information and Digital Technologies should identify key emerging trends and priorities and recruit and bring together the best minds and organizations to collaborate on high-risk/high-gain R&D projects. It should aim for radical, orders-of-magnitude improvements by envisioning the impact of innovations and then working backward to identify the fundamental breakthroughs required to make them possible.

**Grand Challenge Problems**

This plan also urges the national research center to focus on grand challenge problems in education research and development. “Grand challenge problems” are important problems that require bringing together a community of scientists and researchers to work toward their solution.

The following grand challenge problems illustrate the kinds of ambitious R&D efforts that should be coordinated at a national level. Notably, although each of these problems is a grand challenge in its own right, they all combine to form the ultimate grand challenge problem in education: establishing an integrated end-to-end real-time system for managing learning outcomes and costs across our entire education system at all levels.

1.0: Design and validate an integrated system that provides real-time access to learning experiences tuned to the levels of difficulty and assistance that optimizes learning for all learners and that incorporates self-improving features that enable it to become increasingly effective through interaction with learners.

2.0: Design and validate an integrated system for designing and implementing valid, reliable, and cost-effective assessments of complex aspects of 21st century expertise and competencies across academic disciplines.

3.0: Design and validate an integrated approach for capturing, aggregating, mining, and sharing content, student learning, and financial data cost-effectively for multiple purposes across many learning platforms and data systems in near real time.

4.0: Identify and validate design principles for efficient and effective online learning systems and combined online and offline learning systems that produce content expertise and competencies equal to or better than those produced by the best conventional instruction in half the time at half the cost.