



Title: K-20 Improvement Project
Category: Data, Information and Knowledge Management
State: Michigan

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Executive Summary: K-20 improvement project

In Michigan only 37% of our population aged 18 – 24 enrolls in post secondary education, far below the national average of 48%. Michigan leaders realized student achievement is tied to economic development. This is critical since the unemployment rate in Michigan has been the highest in the nation for 45 consecutive months thru 2009. A large part of Michigan's strategy to reverse this trend is to better prepare students and displaced workers with the education and skills needed for jobs in the 21st century. To this end, Michigan has embarked upon the K-20 improvement project. This is an integrated project shared across multiple state departments aimed at increasing educational achievement. The key to holding Michigan accountable for turning our educational investment into jobs is equipping educational policy makers and institutions with data. We must improve how we measure outcomes and use this data to attract prospective employers. The K-20 improvement project relies on a data and knowledge management strategy that focuses on three core elements: (1) Expand our data systems used to collect and report on student outcomes, (2) Simplify access to education and training for displaced workers and (3) provide an Internet strategy to simplify college admissions, college transfers and tuition assistance. This integrated project relies on the innovative use of technology, and has launched several IT solutions in the past 36 months including:

- In 2008, Michigan launched the Michigan Student Data System (MSDS). This system assigns a unique identifier to every K-12 student. This identifier stays with students throughout their academic careers and allows policy makers to better track student achievement. This same identifier is being adopted by other educational providers in Michigan via the use of web services. This provides policy makers with an accurate way to formulate a complete picture of student histories and progress as they advance through their educational continuum.
- In 2007, Michigan launched the No Worker Left Behind project and supporting website. This project uses web technology to assist displaced workers in applying for tuition assistance and selecting eligible training programs across Michigan's post secondary networks.
- Michigan's education portal has simplified the college enrollment experience by offering three online services:
 - Free electronic transcript service between high schools and colleges.
 - Michigan transfer network – Students can use the web to determine what classes transfer between colleges in Michigan.
 - Student financial assistance information - Simplifies eligibility determination and the application process for numerous grant programs.

Michigan's management and measurement of student data allows us to accurately assess student outcomes and provide the information necessary to make informed decisions in order to foster continuous improvement in our K-20 education system. The management of information allows Michigan to provide improved content for applications resulting in increased matriculation of citizens into post secondary education. Completing the cycle, this holistic technology approach results in increasing numbers of college graduates in Michigan and effectively positions Michigan for success in the 21st century economy.

C. Description

Michigan has adopted a data, information and knowledge management strategy to help track and measure educational achievement and assist citizens in securing post secondary education to expand employment opportunities. This is a key strategy to address our chronic unemployment challenge. Michigan's recovery relies on our ability to replace manufacturing jobs with competitively paying technology jobs. The skills needed for the 21st century economy are dependent on advanced education. Unfortunately, only 37% of Michigan's population aged 18 – 24 enrolled in post secondary education. This is far below the national average of 48%. The results we are working toward are attracting new high tech jobs to Michigan, providing better educated citizens to take those jobs, developing a predictable process for applying and transferring throughout our higher education system and implementing integrated data systems to proactively identify improvement areas and track the outcomes of these efforts. These goals are highlighted in the Lt. Governor's Commission report on higher education and economic growth: <http://www.cherrycommission.org/>. Michigan's strategy for implementing these goals is a multi-agency, multi-year project titled "The K-20 Improvement Project". This project has several milestone deliverables outlined below.

Data management and measurement

Our strategy begins with consistent data measurement of educational outcomes. Understanding how our students are progressing academically is necessary to improving the effectiveness of educational programs. This same data measurement process includes continuity. We need the ability to track students across all educational systems. Michigan has several educational systems: K-12, migrant education, career and technical education, adult learning, post-secondary. In order to provide a mechanism to accurately measure student performance (both individual and aggregate) we have developed the Michigan Student Data System (MSDS) that relies on a unique student identification process that assigns an identification number to students and stays with students throughout their life-long learning career. The MSDS is the repository for 1.7+ million student records. This data management solution addresses several problems with a uniform solution, including:

- Students moving from one school district to another could not be consistently tracked. This resulted in the student record appearing in multiple school systems and skewed aggregate outcome reporting. Our MSDS allows schools to use a web interface to resolve duplicate data issues and greatly improve the accuracy of our measures.
- The unique student identifier is used by multiple sub-systems (migrant education, early childhood etc.). As students move throughout education systems, the UIC stays with the student, allowing for tracking and measurement of achievement outcomes.
- Standardized testing for K-12 students uses the UIC to associate test scores with students. This helps to quickly tabulate individual and aggregate (school, district level) reporting.
- A web service is available allowing any post secondary organization to leverage our unique student identifier process. This allows for tracking of a student from high school into college.

The Michigan Student Data System is a custom application developed in Microsoft's C#.Net platform. Student records are written to a SQL back-end. The assignment of a UIC uses a hashing algorithm to create the unique student identifier and an indexing process to ensure a duplicate number hasn't been used. Our system is robust enough to process 1.7+ million student records from over 4,800 public and non-public schools several times each year through the use of both on-going and scheduled data collections.

Data management allows us to measure education outcomes. Our next project milestone deliverable uses an Information and content management approach to give lifelong learners a holistic view of post-secondary education services previously not available. For a generation, citizens have had no clear path for determining:

- what educational programs were available (both college and vocational training)
- what financial assistance might be available
- Whether college credits could be transferred between schools.

These problems were cited in the Cherry Commission report as being contributing factors to students not pursuing college or not completing college. To address these issues, Michigan has developed complimentary applications and websites that remove these information barriers and give life-long learners a clear path towards educational opportunities. Our coordinated approach includes these key solution elements:

Job training and college assistance

The No Worker Left Behind (NWLB) program <http://www.michigan.gov/nwlb/> is a free two year tuition program to assist displaced workers in learning new skills necessary to secure a job in the new economy. The program is supported by a dedicated website that helps citizens apply for tuition, locate colleges and training academies within their community and determine what career paths may be most suitable for them.

The Michigan College transfer network - <http://www.michigantransfernetnetwork.org> is a centralized web-based system that allows any student who has completed a course at any Michigan College or University to find the equivalency for that course at any other Michigan College or University. Prior to this service, there was no clear path students could follow to determine what classes would transfer across institutions. This was cited as a major barrier to students completing a four year program.

Michigan's financial aid website - <http://www.michigan.gov/mistudentaid> gives students and parents information and eligibility screening tools for dozens of resources to help pay for college expenses. The lack of a single state source on financial aid was cited in the Cherry report as a major complaint by students and parents.

Michigan has adopted technology solutions as core elements of our K-20 improvement project. Integrated data and information management strategies are helping Michigan track outcomes across systems and deliver useful and relevant information and services to our wide array of life-long learners.

D. Significance

Our K-20 improvement project utilizes a data management strategy that has improved government operations in several ways. The most significant improvement is having a single unique identifier (UIC) that can be used across educational systems. This allows us to reduce redundant student data collection and track student outcomes across multiple systems. This strategy is possible because Michigan leaders convened a cross-agency data management and governance team who helped identify systems of record that could benefit from using a uniform identifier. Our unique student identifier is shared across these major systems and processes:

- Migrant education data system
- Career and technical education system - houses data on students taking occupational and vocational courses.
- Special education - houses data for special education students including individual education plans and disability information.
- Adult education system – tracks adult learners working to complete high school graduation requirements.
- All student achievement testing uses the UIC to pre-label testing booklets. The UIC allows us to accurately match students to tests and aggregate testing results across school building, school districts and state-wide.
- Early childhood longitudinal evaluations – The UIC allows us to measure the outcome of students over time who participated in early childhood programs. This single view of a student did not exist pre-UIC.

Michigan plans on our student identification process to be further extended to other education systems, most notably our post secondary education community. We have developed a web service that allows education institutions to obtain UICs for students seeking enrollment. The significance of measuring student performance thru college graduation has implications for many stakeholders:

- Policy leaders will understand how well early intervention programs worked.
- Demographers can understand who is going to college from what school districts.
- The relationship between spending and educational achievement can be looked at with new data provided by post-secondary education.
- Longitudinal analysis for any remedial program at the K-12 level can be measured into college.

The initial “entree” point for introducing the UIC into the college environment is our electronic transcript process. Michigan high schools can electronically submit student college admission applications to any public / private institution for higher learning. This service has been in operation since October 2009 and relies on the use of the UIC to reconcile student applicants back to the originating high school. This will provide us our first cohort of students that can be tracked into post-secondary education.

The additional deliverables within our K-20 improvement project embrace information and content management principles. This approach relies on using web technology to simplify the admissions process into post secondary education and vocational training. Major elements of this project phase include:

- The No Worker Left Behind program averages 139,000 monthly visits to our website. This unified website brings together all information needed to apply for entry into this tuition assistance program. Geo-coding elements are used to help applicants locate programs within their community. Success measures include:
 - Our initial 18 month outcomes indicate 62,000 citizens have entered training programs at community colleges and trade schools. 55% have completed the training and 72% of those trained retained a job (with new skills) or accepted a new job.
 - 86% of those who found a job got one related to their NWLB training.
- Our financial aid website averages 67,000 monthly visits. In 2009, 171,200 Michigan based scholarships and grants were awarded.
- 254,000 students are enrolled in Michigan's community colleges in 2009 and eligible to use The Michigan College transfer network to prepare for advancement into four year programs.

Michigan leaders expect improved management of internet content will remove informational barriers for citizens and help raise our post secondary participation rate. Michigan is excited to have a data management strategy in place to help measure our success at improving college participation and sharing these outcomes with policy, legislative and business leaders.

E. BENEFIT OF THE PROJECT

The data, information and knowledge management category is well suited to providing technology strategies for improving education achievement in Michigan and by extension, addressing Michigan's chronic unemployment. One of the ways technology can assist in fixing this circular problem is to help measure student achievement so adjustments can be made early in our children's academic cycle, to improve outcomes and increase the likelihood of advanced educational success. Michigan's K-20 improvement project is realizing benefits in all project deliverables to date. Notable benefit outcomes include:

Data management and measurement via Michigan Student Data System:

Michigan's data management strategy allows all educational systems to begin using a single unique student identifier. Policy benefits of this approach include metrics to measure:

- Ability to measure impact of early intervention programs
- Measurement of the impact of high school curriculum changes on increasing post-secondary incoming freshmen enrollment and reducing subsequent drop-out rates.
- Measurement of post-secondary graduation rates that can be used to lure prospective new employers to Michigan
- Production of enhanced outcome data to supplement grant applications

Michigan's unique identifier process is available to any college that wants to use this technology. Our goal is to have all colleges use the identification module by taking advantage of the available web service. This benefits colleges as they embark on the costly replacement of internal identification processes, especially with federal restrictions around the use of social security number. Michigan has provided a low-cost, enterprise data management solution. The state's cost to develop the student data system and UIC process was nearly \$2 Million. Making this service available to each public university (15) and community college (28) will avoid the cost of building an identification system themselves.

Information and content management via web portals

Michigan has distinct web offerings whose primary purpose is to assist citizens in obtaining post secondary or vocational training. Our strategy consists of removing barriers by proving succinct information and a clear matriculation path. This information component of our K-20 improvement project has resulted in several measurable benefits, including:

- The No Worker Left Behind (NWLB) website is Michigan's uniform job training referral site. The site is open to the public and also used at each of our 25 Michigan Works! Agencies. The development of the NWLB Web site and integration of labor data and college curriculum relieved each agency from designing a localized system on their own. Our \$200,000 investment wasn't replicated 25 times (potential cost avoidance of \$5 million.)
- 25,000 citizens have been placed in jobs subsequent to completion of the NWLB program. This cohort would otherwise have been eligible for assistance services which may require a general fund participation match rate.
- Lifelong learners are realizing significant monetary savings by taking advantage of our college transfer network. Financial investments in college curriculum can leveraged as students are able to know with 100% certainty what classes will transfer between institutions. With the rising cost of tuition and student lodging, junior colleges have experienced enrollment increases in the past two years. State-wide, enrollment in community colleges is at 254,000 in the fall 2009 – an 8% increase over 2008 levels. The deployment of the college transfer network as part of our K-20 project offers a clear matriculation path into four year institutions.
- Michigan specific scholarships and grants (excludes federally subsidized grants) were awarded to 171,000 applicants with a loan value of \$213 million in 2009.

Our K-20 project relies on an integrated data management approach and is a long-term investment in our citizens. When we achieve our primary goal of increasing the number of college graduates in ten years and increase the number of businesses locating to Michigan - the economic impact will be tremendous. Estimated annual growth in personal income and the taxable value of that income will be significant. Likewise, the income derived by new business start-ups and the residual effects on local economies will also be substantial.