

State Plan

Return on Investment

Wyoming Cost Benefit Analysis

The planned Wyoming Integrated Statewide Education Data System (WISE Data System) will transform how the State collects data from schools and districts and makes them available to the users of those data. To accomplish this, the WISE Data System will leverage the education software marketplace and its vendors to solve the problem of moving data from application to application and on to the Wyoming Department of Education (WDE). This sharing of data will offload the burden from school staff for re-entry of data into separate software systems onto the vendors and their software applications. Using national data standards such as the Schools Interoperability Framework (SIF) will allow Wyoming to ensure compatibility, consistency, and comparability of the data statewide without mandating a single software application for schools and districts.

The timing of this effort is responsive to the frustration represented by the Wyoming educator who complained that there is so much more data to share and reports to submit that we are reducing teachers and learning by students in order to employ data clerks.

The costs for the system are high. These costs should be viewed as investments in quality data for Wyoming's education system. The benefits from the system are tremendous. These benefits are the returns that Wyoming receives on the investment made. Comparing the two is the purpose of this document. In addition to costs and benefits, there are cost savings and cost avoidances that lower the real price of the new system.

The proper perspective on the Wyoming Integrated Statewide Education Data System (WISE Data System) is that it moves Wyoming's schools into the modern technology-based way of managing their work and documenting their progress. The WISE Data System will build an infrastructure upon which local districts can expand to improve their processes for tasks from checking out books to scheduling busses to managing the growing demands on teachers for designing instruction to match each student's needs.

Some of the benefits defy a simple monetary statement. These are quality improvements. For example, when teachers receive accurate data about new students quicker, or when a legislator has recent data about schools when a

funding vote is pending, or when a WDE manager has valid data to recommend a special program for continuation, the advantages to students, schools, and programs are difficult to quantify. Improved data quality and faster access to those data are primary goals for the WISE Data System.

Some of the benefits and savings are in “opportunity cost savings.” An opportunity cost savings is one that results from a general savings in time and effort, but may be spread over a large number of tasks and people. These can be estimated, but may result in a redirection of resources rather than a reduction in costs. For example, if teachers save two hours by not having to enter student information into forms and software programs, the school’s budget is not reduced accordingly, but the teachers benefit from the opportunity to spend time on instructional tasks rather than bookkeeping tasks. When these redirected hours are accumulated across all the teachers in Wyoming, the savings are substantial.

Some of the benefits are direct savings, either as reductions in current costs or avoidance of future costs. A major direct savings will be the replacement of the current web-based aggregate statistics reports from districts to the State with individual student and staff records from which WDE can calculate required statistics. With this shift in processes, the burden for calculating accurate statistics passes to WDE where those calculations can be made efficiently and comparably for all schools and districts.

The WISE Data System design encompasses an upgrade and expansion of the entire data system for the state’s education entities. The costs expended for the WISE Data System over time will not be less than what is currently being spent. The State will not see a savings over time compared to current expenditures. The capacity of the State’s schools and districts to manage their data and gain use from them is being greatly enhanced. This is different from some automation projects that focus on doing the same thing faster, cheaper, and better. The WISE Data System will do many tasks faster, cheaper, and better, but there will also be newly automated tasks, and value flowing back to the schools and teachers from their data.

A major cost savings is converting from the current web-based, aggregate data reporting forms to a SIF-based data exchange that does not require school and district staff to define, extract, format, and import or enter statistics into the reports. Instead individual student and staff records will move somewhat directly from their software applications at the schools into the State’s database.

The major benefit overall is the availability of data quicker, cleaner, and more usable. Data driven decision making (D3M) will be possible not only from the

collected data at WDE, but also from across the information systems within local schools and districts.

The major cost category for the WISE Data System described in this study is for the acquisition, upgrade, and maintenance of application software and SIF agents in 12 information areas:

- I. Student Information - Personal data, demographics, enrollment, scheduling, attendance, report cards, etc.
- II. Discipline Information - Discipline incidents, actions, etc.
- III. Food Services Information - Meal eligibility, meals served, etc.
- IV. Transportation Information - Routes, bus maintenance, etc.
- V. Financial Information - General ledger, accounts payable, purchasing, budgeting, payroll, etc.
- VI. Human Resources Information - Employee and personnel information, school assignments, etc.
- VII. Directory Information - Location or contact information only (e.g., staff contact information, school address, school number, etc.)
- VIII. Student Performance Information - Assessments and benchmark reporting, honors, AP, scholarships, other performance indicators
- IX. Program Information - Eligibility and participation data for programs other than special education (e.g., Title I, Migrant, Gifted and Talented, etc.)
- X. Special Education Information - Eligibility, participation, and other data for special education programs
- XI. Library Information - Library resources management data and library management information
- XII. Instructional Management Information - Systems that support the classroom teacher with tools for instruction such as instructional planning, instructional design, curriculum management, and grade books

Only the library and instructional management areas are not currently linked to required state and federal reporting requirements.

The implementation of the Wyoming Integrated Statewide Education Data System is expected to have these overall effects:

- ☑ State and federal statistical reporting burdens for schools and districts will be greatly reduced since the WDE will be able to generate most summary statistics from the student-level database.
- ☑ School funding formulas and amounts will be calculated and distributed based upon more accurate, precise, and auditable data.
- ☑ Ad hoc information requests from the Legislature, State Board of Education, and other organizations and governmental agencies can be completed in an automated and timely manner without burdening the schools and districts with a new request for data.
- ☑ Changes in how statistics are calculated (e.g., graduation rates) can be implemented using individual student records without burdening schools and districts to recalculate.
- ☑ Longitudinal matching of records will allow analyses of trends and researching of issues, policies, and program effectiveness.
- ☑ Relationships across data sources will be possible, e.g., linking graduates to courses taken.
- ☑ Electronic access to education records of mobile students will enable timely and accurate placement of these students in their new schools.
- ☑ The ability to track mobile students statewide will provide better statistics on retention, promotion, dropout, and graduation rates.
- ☑ Redundant reporting requirements (which have already been reduced by web-based and other electronic reporting methods) upon schools and districts will be greatly eliminated.
- ☑ Comparative data will be enhanced to help the Legislature, state education officials, and local school districts make better decisions about education initiatives.
- ☑ Information will be maintained at the student level to expand analyses for local school administrators, teachers, guidance counselors, and registrars (with appropriate privacy and security protections) to help improve individual student achievement and school performance.

- ☑ The system will benefit the students in Wyoming schools and their parents with current, valid information about their schools.
- ☑ The system will contribute to a redirection of resources from paperwork to instruction.
- ☑ The cycle time for collecting data and producing useful reports will be reduced to increase the timeliness and utility of the data.
- ☑ The overall burden on schools and districts to collect and report data will be reduced because raw data will pass from software applications into the WISE Data System.
- ☑ Data quality will improve from the point where the data are originally collected through each point where the data are maintained and each time data are exchanged.
- ☑ Use of data and dependence upon data for decision making will increase because the availability of relevant data will increase.

A Wyoming Integrated Statewide Education Data System with timely and accurate data about each student will improve the quality of education for every student in Wyoming.

Without a Wyoming Integrated Statewide Education Data System, Wyoming's schools and districts will continue to bear the burden of increased paperwork when new mandates arise. Schools in states with individual student records noticed less difference when No Child Left Behind expanded the reporting requirements. When Wyoming's Legislature or the WDE adds a reporting requirement or changes how it wants to see education information, the schools now must increase their reporting and change their work processes.

Other states have made an investment of time and resources to convert from collecting aggregate statistics to receiving electronic files of individual student records. Challenges and their associated problems such as protecting confidentiality, replacing reports instead of merely adding more reporting burden, and providing training and support for the change were confronted and solved. So when a new law like No Child Left Behind comes along or their state legislature adds a reporting requirement, the state education agency uses the student-level data to create the new aggregate statistics.

Never has the need for timely, high-quality data been as great as it is now. While the No Child Left Behind Act does not specifically require states to have an

individual student record system, building one now will position Wyoming to be able to accurately and efficiently respond to the reporting requirements. The Act requires states to demonstrate that their instructional programs are meeting the educational needs of individual children so that each child may perform at proficient levels.

Another major need for data is to meet State accounting requirements. Because of tight budgets, it is important for schools, districts, and lawmakers to evaluate how their dollars are used and select programs that best meet the needs of individual children.

Currently, schools and districts must maintain information about students, staff, expenditures and other administrative activities. Much of this information must be supplied to the WDE so that state and federal reporting requirements can be met. WDE has been progressive in converting from paper forms to web-based collections. WDE even uses XML standards for data exchange. However, the current system of data collection, analysis and reporting on students does not yet take advantage of state-of-the-art technology as offered by SIF standards and zones. This next step is one that requires the new WISE Data System to be a statewide system implemented in every school and district.

The current system does not meet many of the analytical needs of educators, administrators, and parents for effective decision-making about programs and individual students. Not much added value can go back to the schools and districts from the state database because most of what is there was sent in its final form by the districts. Aggregate records do not allow WDE to look for students such as dropouts across districts. The current system consists of multiple surveys that require many hours of school and district staff time and high levels of attention to provide accurate data while meeting strict deadlines. Overlapping or conflicting data requirements may lead to questionable reports with minimum utility.

The WDE has recognized the need to better coordinate its data collections about students so that burden on the districts and schools can be reduced. In addition, more and more districts are recognizing the utility of automated information systems for maintaining essential data about children that can be used for effective instructional planning, but many need assistance selecting and implementing such systems. Bringing together these movements in an effort to meet federal and state reporting requirements and address local needs for better data for instructional planning and appropriate student placement is the goal of the Wyoming Integrated Statewide Education Data System (WISE Data System).

The following list of benefits shows how the WISE Data System can better meet the needs of the citizens of Wyoming, including educators, administrators, legislators, and parents.

1. The WISE Data System will collect individual student records several times during the school year using standard definitions and reporting formats. Much of the data needed for federal and state reporting will be included in the student records.
 - a. Burden on schools and districts to report data to the WDE will be reduced because individual student records can be used to derive currently reported statistics and respond to other requests for information. WDE will build state and federal reports from the individual records to eliminate many paper aggregate reports.
 - b. Data about schools and education programs will be consistent and comparable across the State. Decision-makers will have more confidence in the data. The effectiveness of funded programs will be determined by measuring student performance over time. Funding and other decisions will be based on equitable and accurate data.
 - c. New requirements for No Child Left Behind, including determination of adequate yearly progress for schools and districts, will be met by WDE.
 - d. New questions and data requirements can be answered without burdening schools with new data collections because individual student records can produce new statistics, not just the predetermined ones possible with aggregate data collections.

2. The WISE Data System will contain a unique student identifier that will allow the WDE to track the progress of individual students within and across school districts and throughout their education careers in Wyoming, including through postsecondary and vocational education.
 - a. Calculation of state funding levels for schools will be based upon more accurate counts with less duplication of students.
 - b. Schools and districts will receive back value-added data files and reports possible because student data can be matched across separate data files using the student ID numbers.
 - c. Unique student identifiers can be used by districts to follow the progress of their students into Wyoming colleges and universities and to determine where instructional improvement may be needed.

3. Students will be enrolled more quickly and appropriately because the WISE Data System will provide the data needed to make informed enrollment placement decisions when students previously enrolled in a school in Wyoming arrive at a new school district.

- a. A single change to a student's record will be propagated throughout the school's and district's information systems.
 - b. Schools can identify the student's unique identifier through an online process.
 - c. Schools can find out where students previously attended school and contact the schools to get official transcripts.
 - d. Wyoming will be able to calculate mobility rates for schools and districts.
 - e. Mobile students will have their data available to new schools quickly to enable immediate enrollment in special services without redundant testing and diagnosis. Schools will save the resources expended on unnecessary assessments.
 - f. Schools can learn if the student received a disciplinary action that precludes enrollment.
4. The WISE Data System will help Wyoming to obtain more accurate student assessment data in a shorter amount of time by allowing for expedited precoding of student names and demographic information onto assessment answer sheets from the individual records maintained at the WDE.
- a. Teachers, counselors, and other school/district personnel will spend less time preparing annual state achievement test answer sheets, time that can be spent working with students.
 - b. Precoding with the WISE Data System will be closer to the time of testing and will enhance accuracy by avoiding errors from manual bubbling. Data quality will be improved, and the calculations of school and district ratings such as AYP will be more accurate and reliable.
5. The WISE Data System will help schools, districts, and policymakers obtain access to useful data to be used in planning for instructional improvements and other types of decision-making.
- a. Schools and districts will benefit from related gains in automation, software development, and improvements in data quality. The standards and model established by the WDE will guide and facilitate improvements in other areas of information management at the local level.
 - b. Wyoming will have the standards, procedures, and management processes in place upon which to build future expansions and apply new technology to achieve even greater benefits in the future.
6. The WISE Data System will provide the infrastructure and standards for the sharing of data among all software applications using the Schools Interoperability Framework (SIF) standards.

- a. Districts will acquire software applications that are SIF compliant and capable of updating each other whenever there are changes, new students, or scheduled reports.
- b. SIF standards will create efficiency in entry of data and reporting with common definitions and coding of data statewide.

All residents of Wyoming will benefit in some way from the development of the WISE Data System. Data about student learning and performance will be more accurate, timely, and useful for decision-makers. Teachers, counselors, principals, and district staff will spend less time responding to data requests, and will have better data for planning and monitoring the quality of instruction. State agencies and lawmakers will have more accurate data and the capacity to use the data in a variety of ways. Eventually, parents and citizens will have access to better quality information about the progress of students in Wyoming schools.

The following chart describes current data collections and the impact the WISE Data System will have upon them. Of these, 23 data collections can be replaced with full implementation of the WISE Data System.

ID Number: Collection Name	Current Status	Information Areas Related to SEDS	Elements Transferred to SEDS Collection	Elements Remaining to be Collected
Graduate Follow-up from UW and Community Colleges	Out of Scope	None	None	All
Participation in Activities from Wyoming High School Activities Association	Data from Other Entities	Course, Programs	All	None
Vocational Education Concentrator Counts and Skills Assessment	Contracted	Course, Programs, Student Performance	All	None
WyCAS	Contracted	(Data Imported into SEDS)	None	All
WDE 100: Foundation Application	End of Year Summary -- Fiscal	Courses, Human Resources, Financial	All	None
WDE 103: Transportation Expenditures	End of Year Summary -- Fiscal	Transportation, Financial	All	None
WDE 110: 60-day Recalculation of ADM	Fall Collection	Student	All	None
WDE 118: Cash Request Federal Grants	Monthly	Financial	All	None
WDE 335: Vocational Expenditures	End of Year Summary -- Fiscal	None	None	All
WDE 401: Special Education Expenditures	End of Year Summary -- Fiscal	Financial	All	None
WDE 425: Special Ed Student (SEEDS) Child Count	Fall Collection	Student, Program	All	None
WDE 430: 504 Disabled	October Snapshot	Student, Program	All	None
WDE 545: Consolidated Grant Application	Spring/Summer	Student, Programs, Student Performance	Basic Statistics	Proposed Services and Budget
WDE 584: District Technology Status	Fall Collection	None	None	All
WDE 588: School Technology Status	Fall Collection	None	None	All
WDE 595: Math Science Course Participation	October Snapshot	Courses	All	None
WDE 600: ADM-ADA	End of Year Summary -- Fiscal	Student	All	None
WDE 601: Annual School District Financial Report	End of Year Summary -- Fiscal	Financial	All	None
WDE 602: School District Staff	October Snapshot	Human Resources	All	None
WDE 604: District Accreditation	Out of Scope	None	None	All
WDE 605: School Accreditation	Out of Scope	None	None	All
WDE 606: School Demographics	October Snapshot	Student	All	None
WDE 607: Drop-out Counts	Fall Collection	Student	All	None
WDE 608: District Organization for Upcoming School Year	End of Year Summary -- Non-Fiscal	Directory	All	None
WDE 609: Program Contacts	October Snapshot	Directory	All	None
WDE 613: Gifted/Talented Program Description	Fall Accreditation	Programs	All	None
WDE 620: Transportation Snapshot	Spring/Summer	Transportation	All	None
WDE 630: Disciplinary Actions	End of Year Summary -- Non-Fiscal	Discipline	All	None
WDE 631: Incidents of Crime & Violence	End of Year Summary -- Non-Fiscal	Discipline	All	None
WDE 632: Advanced Placement Counts	October Snapshot	Courses	All	None
WDE 660: Free/Reduced Lunch Participation	October Snapshot	Programs	All	None

Wyoming Statistics for 2002-2003:

- 84,500 Students
- 377 Schools
- 48 Districts

If the WISE Data System:

- Eliminates 23 aggregate reports
- Reduces 8 hours per school to compile data for each form
- Reduces 16 hours at a district office to compile each report

Then the following cost savings can be projected.

A total of 70,000 hours of school staff can be redirected to other tasks that are more directly related to instruction and learning, and 18,000 hours of district staff can be redirected to supporting schools. If the costs for these employees filling out this paperwork ranges from \$10 to \$35 per hour, and a typical cost of \$20 is used, then the total dollar equivalent in savings equals:

Estimated Annual Savings: \$1,760,000

Another cost analysis involves the entry and re-entry of data into separate software applications. Assuming that nine student information areas (all except finance, human resources, and directory) described earlier share data within a district, the following costs can be estimated.

Data entry hours if redundant entries: 10 minutes per student per each of 8 applications (with direct entry being made into 1 of the 9 applications considered)

84,500 students X 8 applications X 10 minutes X \$20/hour

Estimated Annual Savings: \$2,250,000

These opportunity cost savings are realized because school and district staff will have many fewer e-mails, papers, separate data sources, calculations, forms, envelopes, and printed reports to manage. The number of errors that have to be resolved will be reduced. The bottom line becomes less a savings of dollars than a redirection of human resources and time to tasks other than paperwork. (Opportunity costs may not provide dollar savings in a budget, but an opportunity to use resources in another way—one more directly linked to student instructional time.) Although fractional and spread across the entire state, these savings in staffing resources will be real.

The estimated costs for the WISE Data System plus all the district-level software applications and management associated with the automation of all 12 information areas is \$16,409,240 over four years. (Of this amount, about half is estimated to be anticipated costs by the districts for software applications they have already committed to within their budgeting process.)

The cost savings outlined above for full implementation equal about \$4,000,000 annually compared to about the same amount for each of the development years. Therefore, once the development progresses to achieve full savings, the majority of the costs for the WISE Data System will be offset by opportunity and other savings.

The bottom line for assessing the return on investment is that the implementation costs will be offset to a significant amount, but not totally by the projected savings and efficiencies identified. The real return is in the benefits to Wyoming's schools, students, and staff. These benefits are encompassed in faster delivery of services and an improvement in the quality and availability of the data upon which decisions are made about students, programs, schools, expenditures, and the management and funding of the education enterprise statewide.

The short-term impact will include some temporary additional burden by schools and districts to make the transition to the WISE Data System. However, states that have made a similar move agree that the benefits are worth the effort.