Analysis of Costs and Benefits Associated with Implementing SIF

Study Summary

For additional information about the SIF Association and for a copy of the entire "Analysis of Costs and Benefits Associated with Implementing SIF" please contact SIFA at staff@sifinfo.org or visit the SIFA web site at http://www.sifinfo.org.

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Educational Systemics, Inc.
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Introduction

The Schools Interoperability Framework (SIF) initiative brings the benefits of data interoperability to school districts across the country. By examining three key school districts' experiences with SIF implementations, it is readily apparent that there are numerous benefits to implementing the SIF Specification. Reporting mechanisms that draw from accurate, consistent, and real-time data enabled by SIF lead to reliable data-driven decision-making throughout the district. Providing teachers with data that allows them to more effectively differentiate instruction can have a profound impact on student achievement. Increases in state and federal funding due to more accurate student counts create opportunities for investments in additional educational programs. Improvements in operational processes lead to increased efficiencies and improved student services.
These efficiencies enable districts to direct more efforts toward their most important mission, that of educating children.

Methodology

Educational Systemics interviewed key educators at each of three districts – Western Heights in Oklahoma City, OK; Naperville Community in Naperville, IL; and Liberty Public in Liberty, MO. Interviews included question-and-answer sessions, reviewing data tables, and viewing reports. Various staff members were interviewed at all levels of each organization depending on who participated in the SIF implementation process. Interviewees included Superintendent, Assistant Superintendent, Chief Technology Officer, Director of Technology, Data Manager, Director of Assessment, and Systems Integrator.

Summary of Case Studies

Liberty Public is an example of a small, straightforward SIF implementation that solved an IT problem: eliminating duplicate data entry and redundant processes across two existing applications. The implementation was well planned with a staged rollout and executed without encountering any problems. The bulk of the effort and benefit was realized by the IT staff and librarians. Interoperability advantages for the IT staff included reduced data entry and troubleshooting time. The librarians are now able to offer improved library services as a result of real-time data communications.

Western Heights started its implementation five years ago as an early adopter of SIF. The district persevered through a long and challenging process but feel it has been worth the effort. The driver of the Western Heights solution was Superintendent Joe Kitchens who had a clear vision of the data-driven decision-making he wanted to achieve and the strategy for attaining it. Kitchens elected to acquire best-of-breed software applications and build a data warehouse with custom reporting tools. Because this implementation was driven from the top, the Western Height SIF solution was far-reaching, bringing benefits to

> *"Ninety percent of the improvement [in test scores] is highly related to this SIF implementation."*
>
> – Joe Kitchens
> Superintendent
> Western Heights
> Public School District

all areas of the district. Most notably, benefits include increased student achievement and increased funding opportunities due to more accurate student counts.

The Naperville SIF implementation is a mix between the experiences of the two districts described above. It started out as an IT solution; however, the goals grew into a broader solution for data-driven decision-making as SIF became the messaging hub for the district. While Naperville has not yet completed its first year of implementation, the future benefits include increased opportunities to use sophisticated data analysis to improve student performance.

Benefits

While some districts may choose to implement the SIF Specification to resolve data interoperability problems, it is important to note that others have successfully broadened the scope and benefits of the implementation to include data-driven decision-making, optimization of funding opportunities, and more efficient business operations. This raises the importance of SIF to a new level in these organizations and can have a dramatic impact district-wide.

Data Interoperability

The most common initial reason for implementing the SIF Specification is data interoperability. Naperville found it too burdensome for its IT staff to manage eight disparate software applications, eight discrete data entry processes, and asynchronous, often inconsistent data. Moving to a SIF solution allowed for a single point of data entry, which saved time entering the data as well as troubleshooting data errors. Naperville predicts that when SIF is fully implemented, it will reduce data entry time by two thirds. IT staff and others who previously performed data entry will have more time for other projects.

With more accurate data, districts can add reporting capabilities to analyze trends. Western Heights is now equipped with a collection of over one hundred reports that consolidate data from multiple application in the "blink of an eye." With its improved reporting capability, Western Heights has not made a single hire to keep up with increased state and federal NCLB reporting requirements.

In the end, centralizing data taught the Liberty staff the benefits of working as a team to follow consistent processes. Trey Katzer, Technology Director of Liberty Public School District, says the staff learned that "they are not an island on their own… It got everyone collaborating more."

Increase in Student Achievement
Western Heights' increase in student achievement is an example of a district using the power of data to inform instruction. With accurate, consistent data and powerful reporting tools, Western Heights began providing teachers with student assessment data at the curriculum standard level. This provided educators with significant assistance in their efforts to differentiate instruction. The result was an average total increase in district-wide student test scores from 760 to 1024, over 30% from 2002 to 2005 as illustrated below in the Western Heights District-wide Academic Performance Index graph.

An integral component of sophisticated student achievement analysis is the implementation of a data warehouse. This is the most challenging and costly facet of the SIF portion of the implementations included in this study. The complexity may be attributable to the fact that a data warehouse is often a new system in most school districts that requires changes in procedures and data flow. However, it also has the potential to provide the largest return in terms of student performance. Both Western Heights and Naperville plan to use predictive analytic tools with their data warehouse to determine what factors effect student achievement, predict future performance, and target early intervention.

Western Heights Public School District
District-wide Academic Performance Index (API)
of Adequate Yearly Progress
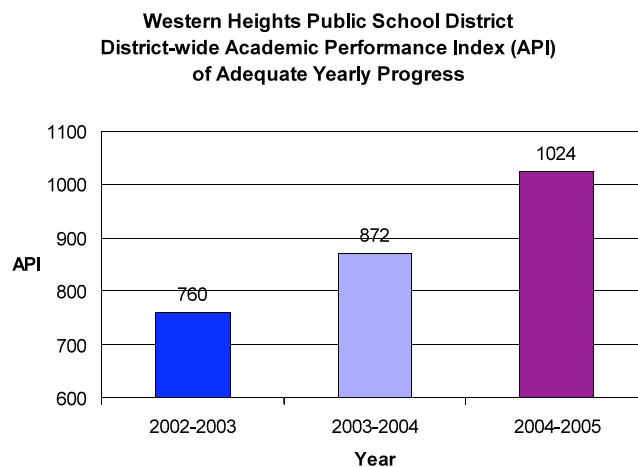
Western Heights District-Wide Academic Performance Index

> *"We have been data rich and information poor. [After the SIF implementation is complete] we will be data rich and information rich."*
>
> – Tracy Oliver
> Manager of Data Operations
> Naperville Community Unit
> School District

Increase in Funding

An increase in funding was an unanticipated benefit of the Western Heights' SIF implementation. The district found that enhanced reporting through better data led to increased student counts for federal and state funded programs. One such example is the $750k increase in federal funding Western Heights received due to its improved tracking of students eligible for free and reduced meals. With more accurate data and enhanced reporting tools, Western Heights was able to identify approximately 1,000 students per year who were previously not included in this program. This was possible since funding benefits of this type are based on reporting of the socioeconomic status of students enrolled in the district.

INCREASE IN ANNUAL FREE AND REDUCED MEALS (FRM) FUNDING

1,000	Additional students per year eligible for FRM
x $750	Received per student for FRM
$750,000	Increase in funding per year for FRM

The percentage of students who are eligible for free and reduced meal status qualifies the district for additional Title I funds for disadvantaged students. The same Title I percentages also translate into eligibility for several other federally funded programs. Since all Western Heights schools are categorized as Title I sites due to their demographics, students in the district are best able to take advantage of these benefits through accurate reporting of these counts.

The increase in district funding through these accurate student counts afforded Western Heights an opportunity to invest in new programs. Western Heights has been able to move to full-day kindergarten and a full-day early childhood program. While it is too early to see the results of these programs on student achievement, the Superintendent is confident that the investment in these programs will be worthwhile.

Improved Student Services

Another advantage of a SIF implementation is an improvement in student services. At Liberty Public, SIF led to real-time synchronization between the student information and library systems. The librarian now has more time to focus on serving students rather than performing data entry in the old library system. The biggest benefit is that the "new student does not feel bad about holding up the [library check-out] line"

while the librarian establishes a new account, says Katzer. Similarly, Western Heights moved to central district registration to streamline processes and more effectively serve new students.

Costs

The investment costs for SIF can vary widely depending on the nature of the solution and what infrastructure, hardware, and software the district already has in place. If the district decides to use existing software applications, the investment costs are much lower and the implementation process may be made seamless to the end-user. Implementing a data warehouse and custom reporting tools that require adaptation of work flow and consulting assistance in making required changes appear to be large expenditures, but the benefits this affords the organization far outweigh the costs.

For the districts studied, the one-time SIF expenses – the ZIS, the SIF agents, and general SIF agent deployment – were low. For Naperville, three of the four applications it implemented in the 2005/2006 year came with SIF agents and the associated configuration for no additional cost. For a large solution such as Western Heights, the SIF costs represent a small percentage of the total investment. Three percent of the total technology investment has been on SIF-specific needs (see Example of Implementation Expenditures graph).

In 2006, districts will find that many of its existing applications are SIF certified so there is no need to acquire different software. Liberty utilized its existing student information and library systems with no additional software acquisitions. Naperville purchased only one new application of the four it implemented in 2005/2006. A key driver for this purchase was SIF certification. On the other hand, Western Heights elected to purchase the best-of-breed applications in each area to ensure full functionality and SIF compliance. As a result, 40% of Western Heights' costs are due to acquiring new applications.

For districts that opt for a data warehouse and custom reporting tools,
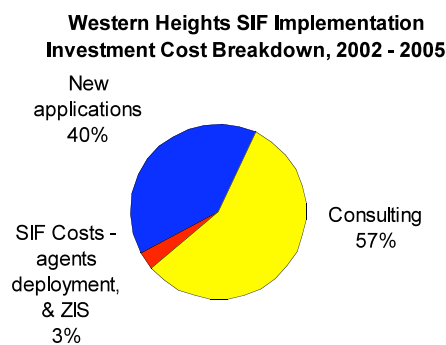
Western Heights SIF Implementation Investment Cost Breakdown, 2002 - 2005

Example of Implementation Expenditures

these expenses will be the most significant. Fifty seven percent of Western Heights' expenditures to date are for consulting and the implementation of the data warehouse. However, Western Heights has more than paid for this investment through increases in funding and student performance. Where there is a strategic vision at the district level for the need to analyze student data and integrate assessment information, a data warehouse with custom reporting is an extremely worthwhile and cost-effective investment.

Federal funding is available to cover portions of the investment costs. Western Heights paid for their hardware through the eRate program and paid for four district-wide trainers through a federal grant.

Some real challenges exist in tracking costs for a technology implementation project such as SIF. Generally in an education environment, tracking costs and personnel time for comparison purposes before and after an implementation is not a priority; the focus tends to be on outcomes, not ROI. Frequently staff does not get reduced but rather redeployed to work on other projects so it does not seem necessary to track the before and after data comparisons. A focus on greater project accountability in the K-12 environment may allow us to gain access to this type of project accounting in the future.

Differences in the way districts account for expenditures and vendors

charge for products further complicate the analysis of the fiscal benefits associated with a SIF implementation. Districts tend to exclude from standard reporting the costs of integrating a software application into SIF if they already own or upgrade the application, assuming it is money they would have spent anyway. Districts also tend to exclude costs that are paid from grant funds. Whereas some software vendors include the SIF agents in the application cost or in the annual upgrade, which is covered under the yearly maintenance fee, others add this as an additional expense. These variations are not meant to obfuscate costs associated with SIF implementation but rather reflect that nature of technology funding and associated allocations that often vary both by geography and functional area.

A lack of clarity about the best time frame to use when examining costs also makes project accounting challenging. Because SIF implementations become an on-going component of how districts conduct business and districts tend to continually add new applications, it is difficult to designate a point in time for analysis that is truly comparable. Additionally, some costs are one-time charges while others are ongoing maintenance fees.

Key Success Factors

A variety of key factors affect the success of SIF implementations. Undoubtedly, the leadership and vision of the Executive Sponsor paves the way for enthusiasm for the project

"We will not talk to any vendors without SIF operations in place," said Kitchens.

and the tolerance for change within the district. The strategic foresight and staff support of Joe Kitchens, Superintendent at Western Heights, turned their five-year implementation challenge into a process that the staff is proud to have embraced and which now pervades their professional practice. Correspondingly, strong project management skills make the day-to-day details of the implementation run smoothly. The fact that there were "no issues" with the Liberty Public implementation is not only a credit to the technology, but also to Trey Katzer, Technology Director.

The implementation process that seems most effective is a staged approach: implement one application at a time until it is functioning properly. Typically, districts start with the student information system because it is a main access point for student data. Implementing SIF with existing applications is quicker and easier because there are fewer process changes and less end-user application training needed.

Two of the three districts studied opted to work with integrators who had experience with SIF, offered guidance to prevent the districts from making common mistakes, and provided custom work often required especially with legacy product. Liberty opted not to work with an integrator because it was most interested in a standard SIF implementation with no customizations.

Among these case studies, Western Heights, the early adopter, had a more challenging process implementing SIF five years ago because it was breaking new ground in defining SIF guidelines for data exchange and working with vendors who had limited experience. By raising the visibility of SIF as a key driver of success for schools in the digital age and working tirelessly with vendors to provide commercially available products that adhere to the SIF specification, Western Heights did the heavy lifting from which many other school districts are now benefiting. Four years later, with the SIF specification more refined, Naperville was able to seamlessly integrate its first two applications without a pilot test.

Conclusion

In summary, there are tremendous benefits to a SIF implementation that range from a data management solution for the IT staff to an information solution for all stakeholders in the district. These case studies highlight that SIF brings true data interoperability, creating new possibilities for districts and states to increasingly do more with good use of technology in this age of high accountability.