

Microsoft®



Microsoft's *Education Analytics Platform*

A Data Visualization Approach to Results Driven K-12 Education

<http://www.microsoft.com/education/solutions/analytics.aspx>

Executive Summary

Superintendents, principals, teachers, students, parents and government leaders make countless decisions every day that affect educational outcomes. In the 21st century, making these decisions is becoming increasingly dependent upon varying types of education data and information that is now more readily available than ever before. It is the ability to understand the validity, impact, and relationships of all of this information that presents both an intriguing challenge and a tremendous opportunity for those in the education community.

Microsoft's Education Analytics Platform (EAP) is comprised of a set of technologies, web services, and data schemas on which developers can more easily design and deploy solutions for K-12 school districts/agencies. Microsoft's EAP is an open, industry standards-based platform that takes advantage of existing desktop and server infrastructures, while offering a bridge to newer technologies and solutions. This approach to solutions design provides educators and administrators with an integrated view of instructional and administrative data, enabling decision making that is connected more directly to measurable results. This approach is intended to enhance one's ability to make effective decisions that are increasingly tied to instructional and administrative key performance indicators (KPIs), as determined by each educational institution and/or agency. In order to do this, it requires an environment in which data driven relationships – program spending to results, instructional programs to achievement, professional development to performance, student attendance to dropout rates, etc. – can be more easily examined and understood.

Microsoft's data visualization approach can be applied to individual agencies, schools, districts, classrooms or programs, depending upon the requirements of the users and the specific goals that are they are trying to achieve. In order for an approach like this to be effective, it must facilitate the integration of data from multiple levels and sources, protect the confidentiality of information, manage both operational and historical data, and provide for an easy way to access information and generate reports based on an individual's specific role. Teachers, for example, need access to different types of information than do administrators, students, parents or community stakeholders. The Microsoft *Education Analytics Platform* was developed with these principles in mind. Each attribute has been carefully integrated into a comprehensive template for maximizing data as a tool that can be used to optimize educational decisions based on results and outcomes.

The *Education Analytics Platform* allows constituents of an education community to more easily view operational and performance data, enabling them to turn situational awareness into action. It provides for data views in various formats (i.e. dashboards, scorecards, and reports) that can be mapped directly to programs and objectives, providing for a more coordinated, accurate and effective approach to achieving an educational institution's goals.

Our goal is simple...to help our education customers take full advantage of the information that they can glean from their administrative and instructional environments by mapping it directly to the goals and objectives of their educational institution. This facilitates an ability to make increasingly effective data driven decisions, and allows for more efficient tracking of progress, identification of areas requiring improvement, and successful programs and initiatives. Today, we are in the information age for schools, and through our *Education Analytics Platform*, Microsoft is committed to help schools turn data into knowledge.

“Since NCLB, schools have learned they must use data to improve student learning for all students. As schools use data, they quickly learn that they must use more than student achievement data to understand what they can do differently to get better results.”

— Victoria Bernhardt, Executive Director of Education for the Future Initiative

Table of Contents

| | |
|---|----|
| Improving Student and School Performance Through Enhanced Data Analysis | 1 |
| Microsoft <i>Education Analytics Platform</i> | 2 |
| Microsoft <i>EAP</i> Technology and Architecture | 5 |
| Unified Communications and Collaboration | 6 |
| Identity Management | 9 |
| Data and Systems Integration | 10 |
| Education Data Model | 11 |
| Microsoft Virtual Earth for Data Visualization | 12 |
| Microsoft Windows Mobile®: Delivers education information and content to any device, anywhere, at anytime | 12 |
| Microsoft's Strengths in Education | 14 |
| Conclusion | 14 |

Improving Student and School Performance Through Enhanced Data Analysis

K-12 education institutions collect large amounts of data on student achievement, demographics and school operations. Correctly analyzing and interpreting the complex relationships that exist between data elements found in such disparate systems (and/or processes) as assessment, teacher qualification, program spending, learning management systems, and student information, are key to addressing the needs of our students, and improving their performance. Insight gained from this analysis better positions schools to assess the acquired skills of learners and in the development of individualized education plans (IEP) that help optimize the learning process for each student.

In an article published in *"School Improvement in Maryland"*, the author states, "creating a collaborative environment has been described as the 'single most important factor' for successful school improvement initiatives." This collaborative environment is not solely targeted at the education institutions themselves but also needs to extend to the broader community (i.e. parents/guardians having access to the academic records of their children) as deemed necessary by the individual educational institution. For example, Microsoft's EAP makes it possible for parents to have the ability to see the latest attendance information, homework assignments, disciplinary reports, and related information via a secured Internet school portal. Teachers can have access to varying views of academic performance information, giving them the opportunity to develop more individualized learning approaches based on empirical data.

In addition, this approach to an enhanced use of data in the process of teaching and learning helps schools to meet the current requirements of the No Child Left Behind (NCLB) Act of 2002, which mandated reform, specifically in the areas of assessment, accountability, and school improvement. NCLB required State Education Agencies (SEAs) to implement statewide reporting systems across all public schools and their students. A methodical approach to data usage and management also helps schools to be able to adapt more quickly to any changes that may occur in legislation actions, such as NCLB, at either the federal or state levels. Many SEAs are in the process of implementing statewide longitudinal data systems, which – once deployed – can help enhance the way a school system collects, monitors, and analyzes student, teacher, and school performance data. Managing and understanding the increasing volume of data that education agencies now have can be enhanced through the use of data visualization tools in the form of dashboards, scorecards and reports that make it easier to understand progress against key performance indicators (KPIs) as defined by a school district and/or agency.

Microsoft's education mission is to enable educators, students, educational institutions and agencies to realize their full potential. To that end, Microsoft continues to make investments in technologies and services that enable school systems to more effectively manage their data assets. This can lead to a greater ability to make informed decisions and the delivery of increasingly effective learning and administrative programs. One such technology innovation offered by Microsoft is the Education Analytics Platform (EAP), a comprehensive approach to delivering solutions that align the school's goals with metrics that can be visualized, measured and communicated to education stakeholders as required.

Microsoft's EAP provides educators with a comprehensive view of information and data that can be accessed and acted upon through a collaborative on-line community. One that connects individuals involved in teaching and learning, the administration of schools and educational agencies. At its core, Microsoft's EAP delivers a state-of-the-art approach that standardizes the availability of data management and reporting tools and is extensible to accommodate specialized reports and needs as required.

Our approach to education analytics helps to incorporate and integrate data from multiple sources (i.e. student information, learning management and business systems) into specialized repositories designed to provide visualized reporting and analysis. This integrated

architecture, when utilized correctly, can help to provide measurable improvements in student management, instructional assessment and accountability, compliance, and business management.

During a time of significant economic challenges, often resulting in budget cuts and the need to “do more with less”, Microsoft’s EAP provides a cost-effective approach that helps local school districts optimize operational and educational accountability and maximize reporting capabilities to local, state and federal constituents.

Microsoft *Education Analytics Platform*

Microsoft’s *Education Analytics Platform* provides the design and baseline template for our education customers and technology partners to develop and deploy solutions that better enable school systems to turn data and information into useable knowledge. It is based on an open standards, web-based architecture that is flexible and secure, helping to join together information derived from many of today’s disjointed school systems. Interoperable by design, the architecture does not force the school to replace existing solutions; instead, it builds on them, enabling better integration of various legacy systems while protecting the information technology (IT) investments that have already been made and providing a path to take advantage of new and emerging capabilities.

The platform offers our education customers and partners a set of core products and tools that work together to provide dynamic data visualization options designed specifically for those in the education community. Because these are commercial off-the-shelf (COTS) tools, the integration is easier, resulting in a lower total cost of ownership and decreased time to develop and implement. Hence, school information technology directors and their staffs spend less time and money working on integrating products, and more time providing teachers and administrators with feature-rich functionality. In essence, Microsoft’s *EAP* provides a strong foundation for more effective information sharing while minimizing the impact on current initiatives and existing information systems.

The Microsoft *EAP* provides a solution that can be effectively applied to the data management and decision support requirements of any individual or group of educational entities. Microsoft recognizes that SEAs and LEAs have both similar and differing data management and reporting requirements. For this reason, the platform was designed with the flexibility to incorporate varying applications, visualize data based on the needs and roles of individual users at all levels, and protect data access and integrity. Examples include but are not limited to:

- Awareness of authorized users who need to know and share information (i.e. students collaborating on homework/classroom assignments; parents communicating with teachers via a parent teacher portal; administrators collaborating on personnel decisions).
- Comprehensive rights management to control who, where and when access to distinctive kinds of information is allowed.
- The incorporation of learning and business processes (workflow, document management, records management, compliance, etc.).
- Providing for online and offline connectivity and collaboration for educators, administrators, students and parents as required.
- The integration of analysis from longitudinal data systems, student information systems, and other operational systems (providing for past, current, and predictive analysis capabilities).
- Enabling access feeds from weather, traffic, media, and other environmental factors to notify students and parents of emergency and schedule change issues.
- Communications integration (ability to access information regardless of device, such as computer, mobile phone, e-mail, text message, alerts, and RSS feeds).

Most often, the format in which data is provided is the key determinant in whether the user will be compelled to actually utilize the information. For this reason, significant focus has been placed on the way in which data is presented to users. Examples of important data visualization components of the Microsoft Education Analytics Platform include:

- Key Performance Indicators (KPIs) – a summary definition of a specific data point, such as attendance. Progress against KPIs is generally visualized in the form of a target value, actual value, a status indicator of actual performance vs. target goal, and optionally, a trend indicator that defines progress towards or away from the goal. The following graphic shows an example of data visualization of a key performance indicator.

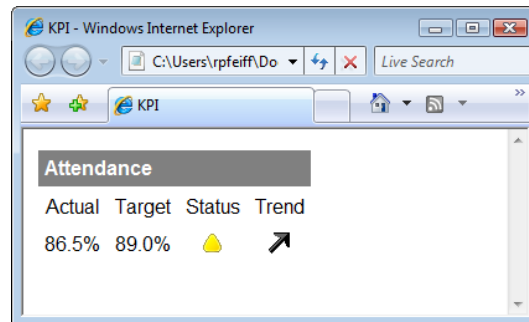


Figure 1: Key Performance Indicator Visualization

- Scorecards – illustrate a collection of KPIs for a specific data point across multiple organizational units, such as schools or classes. Scorecards are used to easily access and compare the performance or status of organizational units. The graphic below is an example of data visualization of a school based attendance scorecard (including trend indicators).

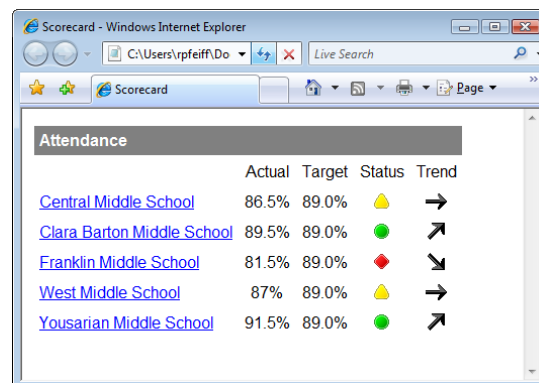


Figure 2: School Based Scorecard

- Dashboards – a collection of scorecards showing multiple data points, that when combined, provides a summary view of varying elements. The user has the capability to “drill down” on a specific data element to gain greater insight into overall organizational performance. (See Figure 9: Charlotte-Mecklenburg Schools Performance Portal)

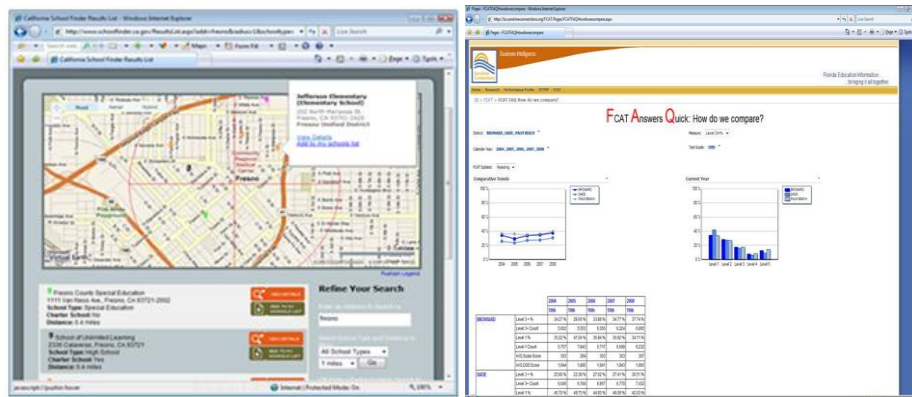


Figure 5: Example of Microsoft's EAP Mapping and Charting Capabilities

Microsoft EAP Technology and Architecture

The Microsoft *Education Analytics Platform* consists of four distinct functional layers (see Figure 6: Microsoft's Education Analytics Platform for K-12 Education):

- Unified Communications and Collaboration (education portal)
- Identity Management
- Data and System Integration
- Education Data Model

Comprised of the following core technologies:

- Microsoft® Office SharePoint™ Server 2007 with PerformancePoint Services
- Microsoft® Exchange™ Server 2007
- Microsoft® Office Communication™ Server 2007
- Microsoft® Windows™ Server 2008
- Microsoft® SQL Server™ 2008

A key strength, and significant reason why the Microsoft EAP provides our education customers with such a strong return on investment proposition, is its inherent modularity. This approach to architectural design provides school systems with the flexibility to select only those functional capabilities that address their specific needs, as they arise. As the requirements of the institution change, the school district has the option to incorporate additional components or technologies, offered by Microsoft and its partners, to extend the functionality of the platform.

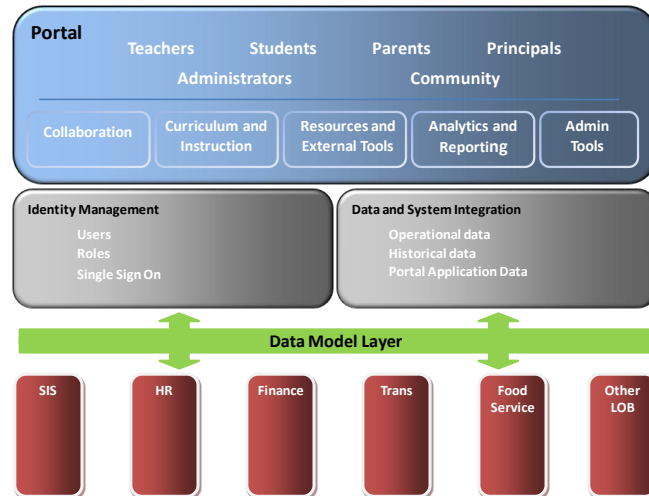


Figure 6: Microsoft's Education Analytics Platform for K-12 Education

Unified Communications and Collaboration

Today, education agencies and institutions are increasingly making use of the latest in communications and collaboration technologies to improve their overall efficiency, provide a better environment for educators to work together more effectively, and improve learning outcomes. School systems are exploring ways to integrate commonly used tools such as telephony, e-mail, instant messaging, and web conferencing, into a more seamless environment that improves information sharing and lowers overall costs. The Unified Communications and Collaboration layer (represented as the *Portal* layer in Figure 6: Microsoft's Education Analytics Platform for K-12 Education) of Microsoft's EAP provides an effective means for educators and administrators to work in partnership, pool resources, build teams, analyze and report on progress and programs, and more efficiently conduct the business of schools.

Assuring that there is a dynamic way for teachers, administrators and students to get information and resources to each other as quickly and effectively as possible provides the following benefits:

- **Seamless and intuitive:** Education stakeholders have a unified experience that allows them to use the most effective ways to communicate across multiple types of devices (e.g. personal computers or laptops, smart phones, voice-over-IP devices, etc.) providing them the capability of anytime, anywhere, access to learning, and education resources, through an easy to use internet accessible portal.
- **Process and system-integrated:** By supporting industry standards and interfaces that are broadly available, school technology staffs can use or build, convenient and contextual communications capabilities into both instructional and administrative applications and systems.
- **Flexible and trusted:** Microsoft's EAP takes full advantage of the Windows® operating system, enabling our customers and partners to deploy solutions that provide education institutions with the greatest flexibility in establishing an efficient, secure, communications infrastructure. One that delivers educational value at a lower cost and allows access to information dependent on an individual user's role and specific need to know.

Microsoft Office SharePoint Server provides the collaboration backbone for Microsoft's EAP (see Figure 7: Microsoft Office SharePoint Server 2007). A tool that is designed to make it easier for people to work together, share resources and best practices and to help education institutions achieve greater efficiency, responsiveness, and lower operations costs. As a result, Microsoft's EAP collaboration capabilities include the following:

- **Web Services-based:** Web services provide a means for school software applications to more readily connect to each other via standard web protocols and data formats. By providing this type of functionality, Microsoft's EAP can more easily integrate existing applications, such as student information systems, into the shared portal environment.
- **Integration:** Supports broad and deep integration of our products, as well as those of our partners and competitors. Our priority is focused on offering our education customers collaborative tools and services that can work within existing technology environments, reducing the need for wholesale upgrades and complete replacement of existing systems. This leads to a lower total cost of ownership for our education customers.
- **Comprehensive Search:** Provides education stakeholders with the tools needed to search large repositories of data that may exist in disparate data stores managed by the school district or agency. This search functionality is an integral part of Microsoft's EAP. It can be extended to support existing third-party applications/solutions that help users easily find, use, and share information with other colleagues as required.

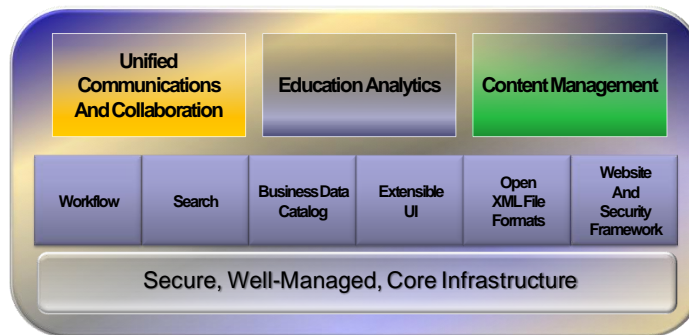


Figure 7: Microsoft Office SharePoint Server 2007

An example of the integration capabilities of Microsoft's EAP can be seen in Microsoft partner, Choice Solutions, edFusion Portal for K-12 Education (see Figure 8: [Choice Solutions' edFusion Portal](#)). This solution, currently deployed in school districts in Connecticut and Wyoming, provides the infrastructure for consolidating school district or state agency applications/solutions into a well-managed web portal environment.



Figure 8: Choice Solutions' edFusion Portal

Streamlined Communications through Microsoft Unified Communications – Through our technologies, Microsoft and its partners understand the importance of enabling education institutions to be more productive by improving the ability to connect people and information across multiple modes of communications. Rather than struggling with separate tools and interfaces, teachers and administrators leveraging the Microsoft EAP unified communications layer enjoy increased access to each other, students, parents and information, at the right times and in the best way for their specific situation. “Presence” information, through Microsoft Office Communications Server, provides colleagues with details about a person’s availability, whether online for instant messaging, open for a phone call or meeting, or out of the building. With Microsoft’s EAP users can point and click to communicate with each other from within any of their Microsoft Office system applications (such as Microsoft Office Outlook, Microsoft Office Word, and Microsoft Office Excel). Whether making phone calls from a Microsoft Outlook e-mail message or identifying the availability of an instructional resource’s owner, school personnel can find and get to the people or resource that they need.

With Microsoft Exchange Server, school systems can easily control the methods by which their users send and receive messages. All message types, including voicemail, e-mail and fax messages, appear alongside one another in the Outlook Inbox. All vital school or agency communications can then be managed in one place instead of switching between different systems.

Additionally, Microsoft’s EAP incorporates technologies to provide SEAs and LEAs substantially greater visibility into student and institutional performance; one of these offerings is PerformancePoint Services which is included in Microsoft Office SharePoint Server. A highly scalable application designed to deliver dashboards, scorecards, and reports that visualize analytics and give the school district/agency the data they need to track progress against established goals. An example of the use of PerformancePoint Services is the Charlotte-Mecklenburg Schools (North Carolina) Performance Portal (see Figure 9: Charlotte-Mecklenburg Schools Performance Portal) developed by Microsoft’s Gold Certified Partner, Mariner, Inc. This portal is providing Charlotte-Mecklenburg Schools with the ability to identify and define progress against key performance indicators (KPIs). It allows the district to track instructional results to the individual student, and evaluate school/district level instructional and administrative performance in a timely manner. The Performance Portal has provided an enhanced environment in Charlotte-Mecklenburg Schools for decision makers to determine and take appropriate actions more quickly and effectively.

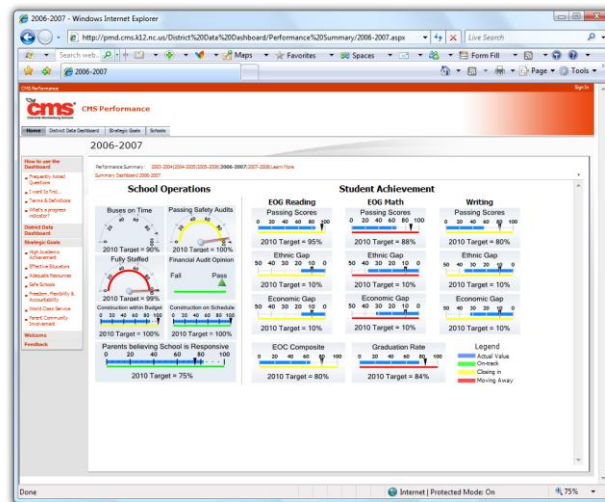


Figure 9: Charlotte-Mecklenburg Schools Performance Portal

Identity Management

Over the last decade, as schools have provided access to information and systems to larger numbers of people, it has become essential that their technology infrastructures be able to validate a user's identity and the types and levels of information that he/she is allowed to access. Over the last three decades there has been a steady expansion of information user communities within education. Initially, school information systems were primarily only accessible by school administrators. Over time, access has been provided in increasing numbers to teachers, then students, and now parents and government officials. With each new user group comes an increasing need to assure that users are validated and that access to information is linked directly to their role and their authorized right to know.

Protecting and limiting access to student records as mandated by the Family Educational Rights and Privacy Act (FERPA), for example, is a critical aspect of information systems deployed by a school system. Although FERPA does not offer any specific security certification process, Microsoft's EAP employs Windows Server® and provides built in security and role-based access through its Active Directory® Service and Authorization Manager.

Active Directory provides role-based security management across the education enterprise at both the LEA and SEA level. Specifically, it allows the implementation of uniform policies for system administrators and users depending on their respective roles. This enables comprehensive management of the mapping between individual access control and the tasks performed in a school district or a department of education. The Authorization Manager provides a comprehensive framework for integrating role-based access management into an application or computer. It enables technology administrators to provide access through assigned user and computer roles that relate specifically to the job or user functions. As a result, technologies incorporated in Microsoft's EAP, enable school systems to provide access to teachers, administrators, students and parents/guardians using a roles-based methodology. When users log on, based on their specific role, they only have access to the components of the Microsoft EAP that are relevant to their specific position or their authorized needs as a student or parent.

Data and Systems Integration

Microsoft SQL Server 2008 provides the data management and system integration services for Microsoft's EAP. SQL Server 2008 offers education enterprise-level security, reliability, and scalability while providing a lower total cost of ownership than competing products. It delivers this solution with high availability for instructional, analytical and administration management applications. Out-of-the-box, SQL Server 2008 provides the following Microsoft EAP services (see Figure 10: SQL Server 2008 Services Architecture):

- **Database Services** provide the core services for storing, processing and securing data. This service provides controlled access and rapid transaction processing to meet the requirements of the most demanding education data applications.
- **Reporting Services** delivers rich, Web-enabled reporting functionality, allowing administrators and teachers the ability to create reports that draw content from a variety of data sources and publish reports in various easy to understand formats.
- **Integration Services** provide a platform for building high performance data integration and workflow solutions, including extraction, transformation, and loading (ETL) operations for linking disparate data sources together.
- **Analysis Services** provide educational institutions with a unified and integrated view of all student and school performance data and provides the foundation for reporting, online analytical processing (OLAP) analysis, key performance indicators (KPIs), scorecards and data mining.

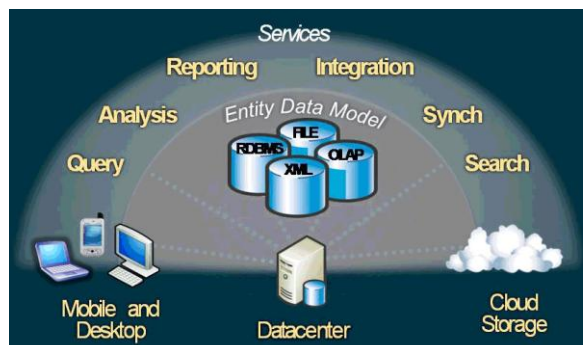


Figure 10: SQL Server 2008 Services Architecture

As a result of the reporting and accountability requirements of NCLB, and the increasing utilization of data driven decision making, school systems are collecting and managing continually increasing amounts of student and teacher data. Protecting and limiting access to this data is foremost on the minds of school officials. Data security is a key requirement in any data services solution, and the combination of the Windows Server 2008 and SQL Server 2008 components of Microsoft's EAP provides end-to-end data protection.

Interoperability: Microsoft's EAP embraces interoperability through current solutions that use the new generation of XML-based software, through technology and intellectual property (IP) licensing, and in partnerships with companies that are dedicated to helping software products work together. There are two major elements to the interoperability strategy incorporated into the Microsoft EAP. First, we continue to support education's need for technology that works well with what is already in place. Our products and solutions are focused on interoperability and have significant functionality dedicated to connection with non-Microsoft products. Second, we are working with the technology industry to define a new generation of software and Web services, which enables software to efficiently share information and opens the door to a greater degree of "interoperability by design" across many different kinds of software.

Microsoft recognizes that school districts/agencies utilize non-Microsoft products in their current infrastructure, systems and applications. The interoperable architecture on which Microsoft's *EAP* is built allows considerable interaction with these products so that school districts can continue to utilize these investments while being able to capitalize on the benefits that Microsoft's *EAP* provides. The platform is not a replacement for existing software and data. Rather, it is an efficient approach for bringing data management, analysis, reporting, and communications/collaboration capabilities to schools/agencies in a much more useful, and visual context.

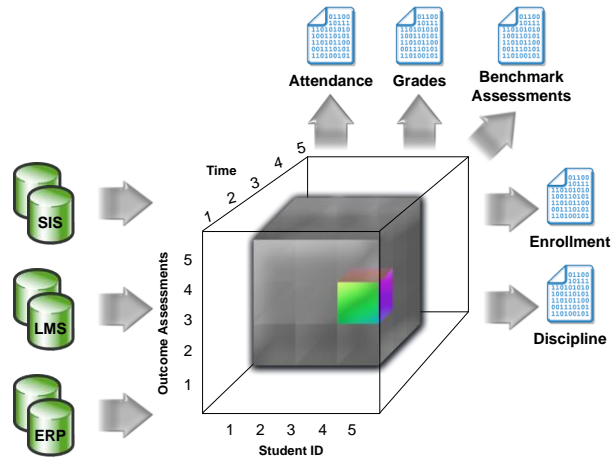


Figure 11: Education Analytics Platform Template

Education Data Model

Microsoft's *EAP* incorporates an education data model layer build specifically for K-12 school districts, enabling broader district/agency adoption and making implementations more predictable in terms of cost and time (see Figure 6: Microsoft's Education Analytics Platform for *K-12 Education*). One of the key differentiators of Microsoft's *EAP* is the inclusion of a data model to help facilitate easier connections between school application systems (i.e. student information systems, food service systems, learning management systems, transportation systems) and the data repositories that house historical and operational data taken from these applications.

An illustration of this is shown above in Figure 11: Education Analytics Platform Template. The cylindrical objects on the left-hand side of the figure represent the various databases that are common to most K-12 school districts/agencies. The cube at the center of the diagram represents the data models and business rules needed in order to connect these disparate databases, process the appropriate data elements, and make the data available to the requesting application/solution.

As a result, the major functional areas addressed by the incorporation of a comprehensive education data model into Microsoft's *EAP* include:

- Collaboration among educators, students, parents, administrators, and the community
- Definition of standard education data elements and their relationships
- Education data analysis, reporting and visualization (instructional and operational)
- Providing administrative and instructional information and tools
- Historical and operational education data management
- User management and security

In addition to the core components mentioned above, other exciting technologies and capabilities available within the Education Analytics Platform include, but are not limited to:

Microsoft Virtual Earth for Data Visualization

Virtual Earth enables school districts to search, visualize, and collaborate, using data in the context of geographic location. This technology can be applied to school buildings, neighborhoods, attendance patterns, transportation systems, emergency services, etc., providing school employees and parents with a pictorial representation of school district data and administration. An example of this is the California School Finder Portal (www.schoolfinder.ca.gov), which provides California residents the ability to compare schools side-by-side, including the latest school rankings, course offerings, etc., simply by searching for schools within a defined radius, relative to a zip code, address, or school name.

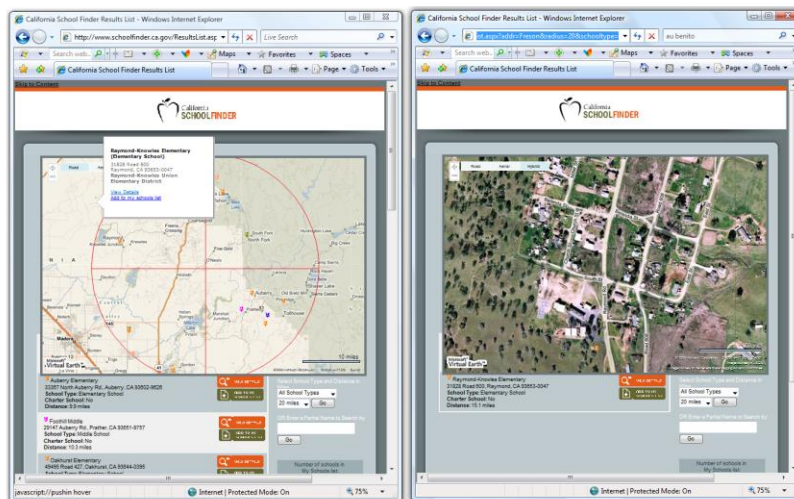


Figure 12: California SchoolFinder Portal

Information provided on this site includes:

- Academic Performance
- Student Enrollment
- Students per Teacher
- Graduation Rate
- Drop-out Rate
- Average Expenditure per Student for District
- Student Demographics
- Course Offerings

Microsoft Windows Mobile®: Delivers education information and content to any device, anywhere, at anytime

“Cell phones are not just communications devices sparking new modalities of interaction between people; they are also particularly useful computers that fit in your pocket, are always with you, and are nearly always on. Like all communication and computing devices, cell

phones can be used to learn. So rather than fight the trend of kids coming to school carrying their own powerful learning devices—which they have already paid for—why not use the opportunity to their educational advantage.”

-- Marc Prensky – Author of, *“What Can You Learn From a Cell Phone”*

Microsoft’s EAP recognizes the role that mobile computing devices can play in the delivery of educational content to K-12 students. As the computing power and capabilities of these devices continues to improve, educators are presented with an opportunity to address the digital divide question by providing more students with access to information resources and the Internet at a very low-cost entry point. At the beginning of this decade it was not financially feasible to provide each student with the tools needed to learn and compete in a 21st century education system. With the proliferation of mobile computing/communication devices across all aspects of everyday life, the entry price for these devices (i.e., smart phones, PDAs, ultra mobile PCs, etc.) is coming more within the reach of many school systems. In addition, the percentage of students and teachers personally owning these devices is continuing to increase at a dramatic rate. The incorporation of these devices into the education process means that learning does not need to stop outside of the physical classroom walls; providing opportunities for students to receive study resources, homework assignments, work in peer study groups, etc. via mobile devices.

An example of this is Project K-Nect: a pilot program that seeks to improve the math and science skills of students and prepare them with the skills necessary to succeed in the 21st century workplace. (See Figure 13: North Carolina Department of Public Instruction Project K-Nect.)

Windows Mobile provides a foundation on which our partners and customers can deliver education content to students via an intuitive easy to use environment that is familiar to most students. The platform provides:

- Versatile delivery and development of mobile applications.
- The ability to maximize information technology assets and the capability for anytime, anywhere learning.
- Greater control over security.
- Centralized, streamlined device management.



Figure 13: North Carolina Department of Public Instruction Project K-Nect

Microsoft believes that strong communications and collaboration between teachers and students is one of the cornerstones of a successful education system; one that empowers education institutions to be more productive, efficient, and innovative. Windows Mobile is an application platform that provides a mechanism for facilitating this environment and for allowing students and teachers to communicate and collaborate in a variety of ways.

Microsoft's Strengths in Education

Microsoft Corporation understands the application of technology based solutions to both the process of teaching and learning and the business of schools. Our company, and our business partners who develop and deploy Microsoft EAP based solutions, can play an important role in addressing the technology challenges facing our education customers, helping them to implement effective decision support systems that visualize data in an easy to understand format no matter what their level of technological understanding.

Microsoft's strengths include:

- **Extensive Research and Development (R&D)** efforts that allow Microsoft to incorporate both existing and emerging technologies into our education market targeted solutions on an ongoing basis. Our \$7 billion annual R&D budget enables the transfer of research advancements into market-leading products.
- **The Availability of Commercial Off-the-Shelf (COTS) Solutions**, which are agile, reliable, supportable, scalable, secure, and affordable. This results in a lower total cost of ownership, higher return on investment, and shorter implementation cycles.
- **Supporting Education's Utilization** of Microsoft technologies through K-12 School Licensing Agreements and the development of tools and solutions that are specifically focused on the needs of K-12 school systems.
- **Decades of Experience in Providing Education Solutions**, based on Microsoft technology, which are deployed at federal, state and local education levels.
- **A Robust Platform** providing integrated products and tools for creating education system wide distributed applications that deliver unparalleled information sharing and interoperability capabilities.
- **A Partner-Centered Model** that includes application partners who focus on and build applications explicitly for education customers.
- **Trustworthy Computing Security Commitments** that help ensure that Microsoft products are available when customers need them, and that the integrity of an education entity's information is secure and privacy is assured and safeguarded.

Conclusion

In an era when education agencies are tasked to do so much more with so much less, Microsoft is leveraging its core strengths to help our education customers meet the challenge of providing 21st century educations to today's students. Microsoft's commitment to constant innovation has helped us reach the privileged stage of having education customers who use our technology across their respective communities at the federal, state and local levels.

Making the right choice among various technologies is essential if schools are to successfully meet today's challenges and provide a solid foundation for the future. Investing in a platform that is built for current and future interoperability and collaboration is a critical component in our national effort to enhance our education system's success and global impact. Through solutions like Microsoft's *Education Analytics Platform*, we believe we can play an important role in helping school districts and education agencies achieve these important goals.

“An education isn't how much you have committed to memory, or even how much you know. It's being able to differentiate between what you know and what you don't. It is knowing where to go to find out what you need to know; and it's knowing how to use the information you get.”

— Attributed to William Feather