

THE COMPUTERWORLD HONORS PROGRAM

CASE STUDY



LOCATION:
Sunrise, Florida, United States

YEAR:
2006

STATUS:
Laureate

CATEGORY:
Education and Academia

NOMINATING COMPANY:
IBM Corporation

ORGANIZATION:

School Board of Broward County

PROJECT NAME:

Project Knexus: OnDemand Workplace for Education

Summary

In the Knexus project charter, the Knexus Steering Committee adopted the following as its mission statement: KNEXUS, defined as the merging of knowledge with technology, is the management access system that will unify SBBC's applications, information, and diverse databases through a single internet web page commonly known as a web portal. SBBC administrators will have a customizable gateway for the information they need to support "No Child Left Behind" (NCLB) goals and requirements. Web portal content and applications will be tailored to specific job requirements in order to meet the diverse needs of district personnel. The KNEXUS project will create a "Workplace for Education" that provides administrators access to information about their students and allows effective communication with students, parents, teachers, and other administrators to ensure that Adequate Yearly Progress (AYP) goals are met. Creating a unified workplace is no small achievement given that, as the nation's sixth largest school district, the School Board of Broward County (SBBC) has an IT environment similar to those found in Fortune 500 companies- large, complex, distributed and populated with many legacy applications that are difficult to integrate. The Pilot Phase 0 developed and implemented in August, 2005; leveraged the WebSphere Portal Extend V5.1 capabilities, originally developed during the initial February 2005 proof-of-concept, to establish this limited scope "Workplace Pilot" solution. Phase 1 of Project Knexus Workplace for Education began in October, 2005; and leverages IBM portal and collaboration capabilities to increase responsiveness and meet educational objectives initially for School Administrators and Guidance Counselors. The Workplace has the potential to transform education in Broward County by providing integrated, role-based access to district information, educational resources, applications, and collaborative tools for all stakeholders, through single sign-on capability. As such, it offers a unified workplace organized best for each user.

Introductory Overview

The Internet has proven to be a fundamental tool to improve end-users experiences with services while reducing the costs associated with those systems and services. Broward County Public Schools' Information Technology Department at Education Technology Services (ETS) was



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ready to make use of the web as a key enabler to meet our organization's goals by leveraging advanced technologies to fulfill our school district's mission, enhance productivity, and change the means by which we conduct business. Through the use of the Workplace for Education, business processes are implemented flexibly using services that are sourced from anywhere and can be added, deleted, rearranged as needed to meet the needs of the organization. Information is available, searchable, and able to be integrated and aggregated. The SBBC faced the challenge of transforming a legacy IT environment that inhibits information access, productivity, and partnering among stakeholders; in addition to hindering student achievement and compliance with such mandates as the No Child Left Behind Act. This federal legislation, passed in Congress in 2001 and signed into law in January 2002, places enormous emphasis on testing, reporting and accountability. The WebSphere Portal offers a cost-effective and powerful platform designed to provide students, parents, educators, and administrators with an integrated role-based access to educational resources, applications and collaborative tools that assist in meeting the No Child Left Behind requirements. The Workplace has created a foundation and role-based portal for on demand information access and collaboration by teachers, parents, students, administrators, suppliers and partners, as well as the community at large. The project uses a "surround strategy" method of building projects, to be deployed in phases over a 3-5 year period. The surround strategy is comprised of an information flow of new technologies and services with an operation flow of information management which together enables information delivery from our data warehouses. The Workplace for Education blueprint used a "launch and learn" multiphase, iterative roll out strategy to maximize early benefits. Phase 0, the pilot, selected a core group of 30 users; half comprised of principals of district schools, and the other half made up of selected guidance counselors who tested capabilities and provided input for future project phases. Four critical applications and data that relate to the daily job functions of both groups were selected and integrated into portlets for the pilot. Currently, Phase 1 increases the number of users to approximately 2000 administrators, principals and guidance counselors gaining portal-based access to all the resources they need to do their jobs-particularly the educational performance monitoring mandated by the No Child Left Behind Act. The Workplace for Education suite ties data together into a single central repository for seamless review and reporting. This shared access point provides educators access to the information and collaborative tools necessary to make faster, more informed decisions about teaching and learning. Subsequent phases of this project will find the portal scaling in both audience and content/services. Projected to be fully phased in over the next four years, the Workplace for Education will eventually support 400,000 users. Phase 2, beginning in 2007, includes student and teacher collaboration and additional Workplace expansion including the single sign-on functionality. Phase 3, in 2008, will add an SAP enterprise resource planning environment for business and operational application. Phase 4 will open the Workplace for Education to external business partners and the community at large, where the OneBrowardNetwork initiative will offer wireless broadband access at no charge. In this manner, the organization, in Phase 0, established initial high value capability and technology foundation, and expands over time.

Benefits

There are numerous business benefits derived from the Knexus Workplace for Education which include: (a) integrating people, processes, and information, (b) improving decision making capabilities, (c) creating more efficient and effective school operations, (d) creating flexibility to serve all stakeholders and the community at large, and (e) centralizing IT infrastructure that is easy



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to manage, reliable, scalable, and secure. The Workplace for Education enables change through increased process flexibility and adaptability, increases usability by making it easier for users to work with all their systems, enhances integration by making all enterprise applications work together, enables innovation by allowing new applications to be constructed on top of existing applications, and saves money by reducing the expense of owning and maintaining multiple systems. Project Knexus Workplace for Education offers the school district tangible and intangible revenue generation and cost savings in addition to customer, industry, and social benefits. The portal's framework allows access to a variety of heritage systems utilizing single sign-on aptitude, from a single location saving the district time and effort. The ability to organize work based on user preference enables improved productivity by personnel that translates into cost savings for the school district. The capability to sign on once to get access to what is needed results in reduced complexity and help desk support costs. The capacity to collaborate instantly with colleagues, parents, and students accelerates and improves decision making which relegates into revenue generating dollars. The enterprise search functionality, with its sub-second response time on searching 500K documents with thousands of concurrent users and sophisticated relevancy algorithms, creates the ability for non-traditional search approaches. This increases business responsiveness by reducing analysis time and facilitates decision-making. This capability unlocks hidden information by correlating information to bring new insights to light, thereby improving operational efficiency by streamlining information flow while leveraging information where it resides. The Workplace for Education's ability for authentication and provisioning eliminates the need to manage user identities and security policies within each application, thereby improving the school district's return on investment. This works in conjunction with improving customer relationships through unified access management and secure single sign-on. The productivity and collaboration services found within the Workplace consist of such features as instant messaging and awareness, eMeetings, and Teamroom. eMeeting enables users to "white board" and/or "Application Share" on either side of the firewall. Teamroom offers a secure web based "community" to organize related tools, content, and team members. These attributes offer strategic business values that include providing the right content to the right people, moving away from the individual towards teams, providing both a "view" and an "act" capability, which all equates with improved productivity.

The Importance of Technology

Project Knexus Workplace for Education is the grand and elegant transformational journey of the School Board of Broward County (SBBC) that is turning out to be eminently practical. As the 6th largest school district in the nation, we have 231, K-12 schools, 274,000 students and 19,000 teachers. With more than 300 applications running on more than 600 servers and 150,000 client devices which include about 50,000 wireless laptops, and a whole gamut of servers; the SBBC is not lacking in IT challenges. Those most pressing include improving the timelines and accuracy of information delivery, while enhancing the ineffective processes such as redundant data entry and multiple sign-on for applications-typical of fragmented legacy environments. The innovativeness of the Workplace for Education resides in the fact that its complexity is hidden behind the simplicity of its "service interface"; which includes personalization, customization, authentication, and the collaborative services of content management, information management, and integration. The Workplace for Education has the capacity to transform education in Broward County by supporting 400,000 users, putting the SBBC at the forefront of IT innovation in public schools and helping to transform education "one student



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at a time". The Workplace as a technology innovation is a unified architecture and deployment model leading to bottom-line benefits in reliability, security, scalability, and management. It provides a unified view of information from every part of the organization, and delivers it to employees exactly when and how they need it. It eliminates the need to manage user identities and security policies within each application, thereby improving return on investment. As a vanguard IT project, the Workplace for Education places Broward County Public Schools as a forerunner in developing a novel mechanism to achieve such goals as: Enabling change through increased process flexibility and adaptability. Increased usability by making it easier for users to work with all their systems. Enhanced integration by making all enterprise applications work together. Enabling innovation by allowing new applications to be constructed on top of existing applications. Saving money by reducing the expense of owning and maintaining systems, and Integrating people through portal and collaboration capabilities

Originality

Project Knexus Workplace for Education is an exciting pioneering step offering students and their support teams a varied palette of digital content, collaborative tools and resources for 24 x 7 learning and experience with a skill set that is critical to success in the 21st century. It enables teachers the access to the student information system, the virtual classroom and applications for reading, attendance and reporting, as well as a range of collaborative services. The Workplace for Education will offer access to tools for creating and sharing content, curricula, and lesson plans. The student view has the capability of presenting an on demand digital learning environment. Using a laptop and a wireless connection, students will be able to access personalized content, schedules, assignments, textbooks, and just-in-time multimedia learning exercises. Parents will gain access to school assignments, their child's calendar, upcoming school events, child attendance, teacher credentials, the child's performance and access to the same resources as students. Administrators will be able to access core services that support the SBBC operations, such as help desk, logistics, purchasing, maintenance, facilities, transportation and financial applications. The Workplace is designed to provide administrators a passage to valuable educational intelligence, helping them discover relationships that remain hidden when data resides in legacy silos. On the curriculum side, administrators and teachers will have tools to help align lesson plans with government standards and assess educational progress, as required by the No Child Left Behind Act. This enables the SBBC to adhere to federal and state mandates calling for the alignment of educational technology with educational performance monitoring and accountability that depends on easy access to information. Phase 4 of the Workplace for Education expands to include the OneBrowardNetwork initiative offering wireless broadband access to key stakeholders in the community. The SBBC envisions a time when the whole community will benefit from this project by aligning libraries, hospitals, and other entities together so members of our community can leverage the Workplace's infrastructure to accomplish their daily tasks. As such, the school district will remain open for business on a 24 x 7 basis, using an Internet centric model that expands teaching and learning to homes; improving performance on demand, while positively impacting student learning and achievement. In its final form, the Workplace for Education will provide all classes of users with an integrated workspace that contains role-specific applications, tools, and services. Single sign-on functionality will provide simple, secure access. Available services will create a personalized, relevant web experience enabling users to readily find what they need in a highly interactive and personal way.



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Success

The Workplace pilot included 30 targeted users including district principals and guidance personnel who tested the capabilities and provided input for the future project phases. The Workplace Pilot successfully integrated four applications into portlets: Virtual Counselor, TERMS, Hyperion, and Class Size Reduction. These applications are presently operational for use by these district personnel during Phase 1. The organization is pleased with the results of the administrative pilot, which has proved the portal's viability and ease of implementation. Guidance counselors and principals report that with the Workplace for Education, data retrieval and compiling that might have taken a week in the past can be performed in minutes because everything is in one place. The pilot successfully integrated applications vital to administrators, guidance counselors and principals, such as Virtual Counselor, the 2005 InfoWorld award winning Web-based tool that puts attendance records, class rank, test scores, and other information securely at parents' fingertips. Also integrated was the student information system, TERMS, a green-screen application made user-friendly via IBM middleware. Principals and administrators now have real-time access to maintenance details such as open work orders and the value of repairs; whereas they previously had to visit separate Web sites or make several calls to get the same information. The district's partnership with IBM will fulfill the goals of the Knexus Workplace for Education Year 1 for a total cost of \$4.347 million, including software at \$2.431M, hardware at \$.557M, and services at \$1.359M. Broward County will realize a \$4.8M real costs savings benefit reflected in the productivity gains of over 40,000 district employees, of which 19,000 are teachers affecting the performance of over 275,000 students. Given the fact that we are the 6th largest school district in the nation, with an operating budget of \$4.45 billion, the return on our investment will be this payback within 13-24 months.

Difficulty

The major challenge that our organization faced in the implementation of the Workplace for Education was uniting our many disjointed applications in an effort to transition away from a fragmented technology landscape. We recognized that the answer to our problem was developing a service-oriented architecture that could enable us to focus on integrating people, processes, with applications and data; assisting us to transition away from a legacy environment lacking a uniform interface. The sheer scope of the project was daunting. Beginning in November of 2004, SBBC began laying out a series of solution requirements which included:

- Multiple levels of integration for easy information access
- Anytime, anywhere access via any device
- Varied resources for online collaboration
- Customized interfaces for different roles and stakeholders
- Support for open standards and interoperability
- Infrastructure reliability, availability scalability and security
- Heterogeneous application integration support
- Easier and more cost-effective centralized management, and
- Ease of integration with various SAP applications

The school district considered a number of approaches, ultimately choosing the IBM On Demand Workplace for Education suite. IBM was chosen because its On Demand Business strategy best aligns with SBBC's need for integration of people, business processes, applications and data in a network-centric manageable environment. The expertise and support provided by IBM Business Consulting Services and its partners also factored into the decision. The school district looked at the competition, which included Vignette, BEA WebLogic, SAP Enterprise Portal 6, and Microsoft SharePoint Portal Server software, but for scaling up to more than 400,000 users, we needed a robust platform. That is why we selected IBM as our comprehen-



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sive source for infrastructure, applications, and services. One such service provided by IBM is their Risk Management Process, offering a continuous, integrated, and forward looking process, consisting of five steps that help communicate the risks faced by the organization. Step 1 helps to identify, search for, locate, and capture statements and impacts of risks before they become problematic. Step 2 analyzes and transforms risk data into decision-making information by evaluating risk impacts, probabilities, and timeframes. Step 3 enables response planning by transforming risk information into executable plans and actions such as mitigation and contingency plans. Step 4 allows for tracking and control by monitoring risk indicators and taking corrective actions by executing mitigation plans. The final Step 5 allows the organization to react by monitoring the risk indicators and implementing corrective actions such as executing a contingency plan. Our organization's second challenge was the management of this extensively long-ranged and expansively wide-ranged project, strategically designed for implementation in four distinct phases, spaced roughly one year apart. Phase 1 consists of the administrative and guidance portal; and with our pilot project already a success, the project is presently scaling up to support all administrators and guidance personnel. Phase 2 is designed to tie in teacher, student and parent components. An SAP enterprise resource planning environment for business and operational applications is scheduled for implementation in Phase 3. The Workplace for Education's culmination Phase 4 plans on including our external business partners and the community at large through the implementation of the OneBrowardNetwork initiative, whose design is to offer wireless broadband access to Broward County constituents. The requirements to manage a project of such a lengthy duration required a tracking mechanism that would offer managers of Workplace for Education the ability to better plan, execute, and monitor its development; while enabling more informed business decisions through enhanced communication. According to the Gartner Group, organizations that establish enterprise standards for project management, including a project office with suitable governance, will experience half the major project cost overruns, delays, and cancellations of those that fail to do so. Through the establishment of a Project Management Office (PMO) as a state of the art enterprise project management system, the school district obtained a long, sought-after workspace enabling the organization to establish uniform processes. The Workplace for Education benefited from the PMO's realistic forecasting of schedule and budget, its coordination of purpose and implementation between itself and other projects, and its formalized tracking system. The PMO enables the school district to be better able to position, track, and align projects with long-term strategic goals. This software solution provided a collaborative environment for knowledge sharing and consensus building. Technology in the school district is so inter-related that a "simple" change in one place can bring down someone in another place. To successfully implement the Workplace for Education, the Chief Information Officer made it a priority to institute Information Technology (IT) Change Management, an industry-standard best practice formal process to submit, review and approve changes to make sure that one change does not cause a new problem. The goal of IT Change Management is to minimize unplanned down time, by stressing that more time spent on planning and communicating results in less time needed for damage control. The IT staff was trained with the knowledge and the tools to control and manage all changes in the IT environment ensuring the smallest possible risk to continuous operation. The Workplace for Education is a very challenging task and costly affair, occurring in an educational environment of conflicting priorities and shrinking budgets. The school district's ability to allocate the needed \$25 million to successfully implement the project is a direct result of its careful planning process, incorporating collaboration between various departments of the organization who



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recognized the initiatives potential for demonstrable results. Along with IBM global services, their software team, the IT Change Management process, and the project management office, we were able to develop the right framework to put this architecture in place, while constraining the financial impact.