Navigating the future

By Adam Garry and Jon Phillips

By blending rich digital resources, access to computing devices, and unified educational data, school leaders are discovering new strategies for personalized learning that inspire students to reach for the stars in a rapidly changing world.

Every day, the education community is producing new research on cognitive development that shows today's students are wired differently for learning. Along with curriculum strategies to heighten educational relevance, schools can foster creativity and academic achievement by integrating learning resources and device innovations that engage and motivate students. Traditional, one-size-fits-all instruction geared for set daily time periods in K–12 classrooms and college campuses is evolving into flexible, on-demand approaches that are designed to support individual learning styles beyond the classroom walls.

These approaches are reshaping the educational experience by blending in-person instruction, online instruction, and digital content in a wide range of media formats—all accessed through mobile and desktop devices. Transforming the learning environment with anytime, anywhere access also entices students to assume ownership of their education in exciting new ways—opening a world of groundbreaking opportunities for learning and collaboration across cultural and geographical boundaries.

By embracing technology, digital content delivery, and actionable student data, educators can enrich the learning process to meet individual needs. They can also use these resources to proactively determine when additional help may be required to achieve successful outcomes, and students

can use them to define their own learning paths. Technology also expands possibilities for parents, guardians, and other family members to actively participate in student education at both the K–12 and college levels—engaging in more meaningful ways than simply reviewing an online report card, for example.

Technology framework for innovation

The evolution of data-driven blended learning spurs K–12 school districts, colleges, and universities to assess, plan, and implement a suitable IT infrastructure that seamlessly supports innovative educational approaches and paves the way for personalized learning. Students, educators, and technologies all play pivotal roles in personalized learning:

- **Students** are encouraged to choose their own learning paths and decide how they will show mastery throughout their learning journey.
- **Educators**, along with administrators and district leaders, can analyze data from student information systems and other online sources to deepen insights and help tailor the learning experience.
- **Technologies** including adaptive digital content; innovative instructional tools; and intelligent, powerful, flexible, and standards-based mobile devices allow educators to more easily differentiate instruction that meets individual student needs than they can with traditional tools.

Personalized learning involves a continuum of cohesive resources, integrated devices, intuitive interfaces, actionable data, and professional learning methods. Utilization of the backward design—a curriculum design method that involves setting goals before opting for instructional methods and means of assessment—helps educators to personalize the learning experience.

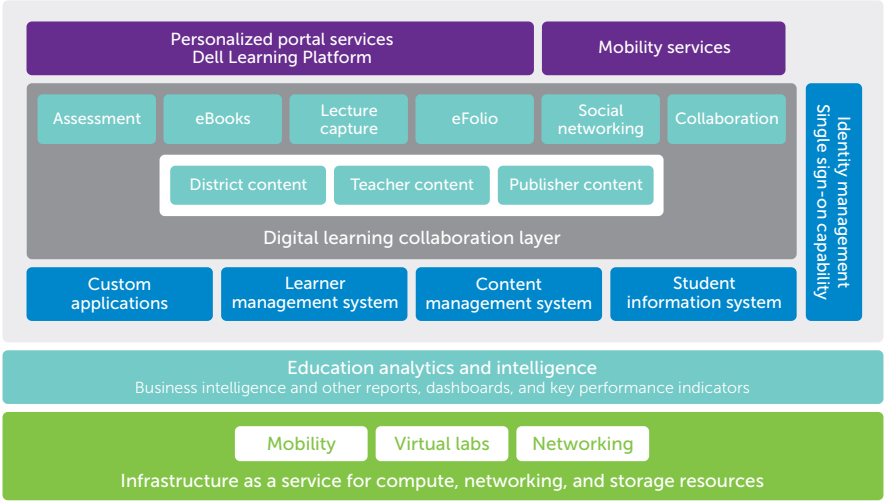

Figure 1. The Dell Learning Platform: A Dell and Intel–developed blueprint for advancing innovative educational initiatives

In addition, Dell and Intel have refined an approach to education that is embodied in the Dell™ Learning Platform (DLP) in K–12 and the Dell Educational Data Management (EDM) predictive decision support system. Dell also offers a variety of tablet, laptop, and desktop devices powered by Intel for educational environments. (See the sidebar, "Evolving education.")

Dell developed the DLP in collaboration with Intel to offer a comprehensive hardware and software blueprint to facilitate personalized and blended learning capabilities in K–12 environments (see Figure 1).[1] Dell and Intel are exploring similar road maps for K–12 and higher education that utilize approaches designed to meet the needs of all levels of education. The EDM system, also developed in collaboration with Intel, provides an integrated system that enables K–12 and institutions of higher learning to capture, store, integrate, visualize, and analyze actionable data.

Effective experiences in personalized learning

Blended learning provides the foundation for personalizing the educational experience. By combining in-person and online instruction, and by utilizing rich content from multiple sources in a range of formats, educators can develop lesson plans to suit individual learning styles. For example, some students might collaborate on a project in the classroom while videoconferencing with team members who are studying at home on that particular day. Other students may use interactive software that adapts on the fly to their individual responses.

Recent research and reporting offer insight into how blended learning helps improve student outcomes. In a 2011 study, algebra-ready eighth-grade students attending schools that did not offer Algebra I courses engaged in blended learning by taking an online Algebra I course. In the report from the Institute of Education Sciences, students taking the online Algebra I course outperformed students taking Algebra I in traditional classrooms based on achievement at the end of grade 8.[2]

In another example, Hall County Schools in Georgia undertook an initiative to provide its students and educators with

[1] For more information on the DLP, see "Building blocks for blended learning," by Adam Garry, in *Dell Power Solutions*, 2013 Issue *Personalize Learning* special edition, qrs.ly/32322bd.

[2] "Access to Algebra I: The effects of online mathematics for grade 8 students," Jessica B. Heppen, Kirk Walters, Margaret Clements, Ann-Marie Faria, Cheryl Tobey, Nicholas Sorensen, and Katherine Culp, Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education, NCEE 2012-4021, December 2011, ncee.ed.gov.

Sparking collaboration

Student excitement can be ignited in a personalized learning environment that enables educators to track individual progress and adjust the curriculum to meet individual needs. View this video to discover how Hall County Schools created an interactive, collaborative learning environment for students and educators.

qrs.ly/l2322bw

a next-generation learning and teaching environment. The environment included personalized and blended learning, and preliminary data indicates that teachers are seeing increased engagement and successful outcomes in student learning.

Higher-education institutions are also looking to implement technology that not only personalizes learning but also helps minimize the expense of attending college. For example, Southern Illinois University (SIU) plans to launch a program that equips incoming freshmen with Dell Latitude™ 10 tablets powered by dual-core Intel® Atom™ processors and running the Windows® 8 platform. The devices are expected to enable access to electronic textbooks, which helps reduce the significant cost often associated with printed textbooks. In addition, mobile access capabilities can extend the learning experience well beyond the lecture hall.[3]

Evolving education

As providers of leading-edge technology and advanced solutions, Dell and Intel are both committed to working with educators to drive innovation that helps transform education. Both organizations are engaged in collaborative efforts aimed at helping educators transition to blended and personalized learning environments. And each has a long-standing history of delivering personal computer and server technology that is tailored to the needs of education. Recent examples of Dell offerings powered by Intel enable the following key benefits:

- **Highly interactive experience:** The Dell Latitude 10 tablet powered by Intel is designed to take full advantage of the touch-screen capability in the Windows 8 platform.
- **Robust collaboration:** The Dell Latitude 3330 laptop powered by Intel Core™ processors offers Bluetooth® support and optional mobile broadband for versatile connectivity options and rich multimedia features.
- **Flip-and-fold productivity:** The Dell XPS™ 12 Ultrabook™ and tablet system powered by third-generation Intel Core processors provides an innovative form factor that enables students to easily convert it from a laptop to a tablet.

In addition, the Dell Assistive Technology Service, developed in collaboration with Intel, provides access, procurement, implementation, and support services that help students with special needs use personal computers equipped with assistive technology features and options. These devices and innovative tools for learning give students with special needs the opportunity to reach their full potential.

To effectively implement personalized learning, schools need to unlock stored and siloed data, enabling educators to draw upon a cohesive, reliable source of information for timely insights to guide intervention when necessary to help students achieve successful outcomes. As a result, infrastructure that enables the collection, storage, and analysis of data is an important part of personalized learning, and Dell is helping educators develop these capabilities.

For example, Dell Services recently helped the University of Kentucky deploy a predictive analytics platform and develop a student retention analytics model that can be used to analyze and predict the likelihood of graduation for students. Educators and advisors can turn information into action by identifying students who show early signs of needing help and highlighting specific areas of concern. The analytics infrastructure is designed to provide self-service tools, along with the capabilities to review predicted graduation scores and preemptively recommend advisor sessions. Real-time data that is personalized and available to advisors helps students advance in their academic careers and encourages engagement with the university in new, innovative ways.

Transition to a blended environment

A suitable blended learning environment depends on several factors, including the current IT capabilities of a school district or university, tolerance for changes to the status quo, and overall curriculum strategy.

A comprehensive transition strategy encompasses the following considerations: establishing a vision, building a strong IT infrastructure, and preparing for implementation. This last phase includes instituting a network access model and addressing professional learning requirements. (See the sidebar, "On a

[3] "SIU launches campus-wide tablet initiative," by Christi Mathis, *The Saluki Times*, Southern Illinois University, January 2013, qrs.ly/sd322bt.

On a mission

Saint Paul Public Schools, an urban district in the Twin Cities of Minnesota, serves a highly diverse student population. Among its 39,000 students, more than 100 different languages and dialects are spoken, and 72 percent of the children are eligible for free and reduced-cost lunches.

While some segments of the student body are successful, other groups have struggled, according to Stephen Hoffman, assistant director for academic innovation and technology integration. "Minnesota is a high-graduation state, but our urban school district is looking at an achievement gap for our students from diverse ethnicities. We have students walking out the door and saying, 'I'm not interested in your education anymore. I'll go someplace else or just drop out.'"

The district considered a different type of educational environment that could enhance learning experiences for the students it was losing. It started developing an individualized approach that stressed personal, blended learning; digitized content; enhanced access to mobile devices; and flexible scheduling.

"We're moving away from schools that start at 7:30 and end at 2, Monday through Friday, with a summer break, where time is constant and learning is the variable," says Hoffman. "We want the opposite: for learning to be constant and time to be the variable. It's about removing barriers that get in the way of student learning."

mission," to discover what motivated one school district to transform its infrastructure in support of a blended learning environment.)

Establishing a vision with strong, specific learning objectives helps educational leaders reevaluate how learning should occur. One creative way in which K–12 school districts can begin this vision is by holding a *visioning day* event that is dedicated to aligning stakeholders. Developing a communication plan helps ensure that the strategy continuously meets the needs of stakeholders throughout the process.

Creating a strong technology infrastructure forms the foundation for an efficient system of blended and personalized learning. Often, an assessment of the existing IT environment is a key first step in identifying inefficiencies and avoiding duplication. The result should produce a road map for infrastructure investments required to help fulfill the vision.

Network access is an important consideration for school districts, colleges, and universities. The IT infrastructure must be able to meet the demands of devices requiring high-speed, Wi-Fi® connectivity. While K–12 schools are working to find the right balance of school-provided device versus bring-your-own-device (BYOD) strategies, many institutions of higher learning are starting from a BYOD perspective. Either way, the network access model must facilitate people and processes as well as technology.

Professional learning should be at the center of the plan to promote understanding and efficiency, helping educators make the most of technology and device innovations and apply best practices to personalized instruction.

Rich educational outlook

Blended learning environments are particularly well suited to the changing ways in which technology and digital content pervade everyday life. Online instruction, mobile devices, assistive technologies, and other innovations blended with traditional classroom instruction introduce fresh opportunities to build enthusiasm. Personalized learning frees educators to customize curriculums that help make learning come alive for each student rather than implementing one-size-fits-all lesson plans geared for presenting the same content at the same pace to a group of students.

To provide an effective foundation for blended and personalized learning, K–12 school districts, colleges, and universities need to incorporate the requisite IT infrastructure refinements into their curriculum strategy. Dell works extensively with educational organizations worldwide and strategically with Intel and other organizations to develop solutions that help educators put their vision of a rich learning environment into action today. PS

Authors

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