Technology and Education

Ten emerging insights

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Introduction

In today's world of education, technology is the power tool. Course management systems that support classroom and online instruction are bringing learning to life in new and exciting ways. As this push for effectiveness in teaching and learning grows, the ever-evolving suite of ERP systems is smoothing transactions. Most exciting for us is the emerging world of enterprise intelligence systems that are equipping instructors and administrators to ask and answer hard questions about efficiency, effectiveness and impact in ways they never dreamed possible. In comparison, the strategies used just 15 years ago to hammer out instruction, cobble together registration filing systems and slog through reams of reports now seem quaint. However, as you well know, significant challenges and opportunities remain.

I say this after having had the pleasure of editing an edition of the Sloan-C *Journal of Asynchronous Learning* that included in-depth explorations of demographic trends, technological tools and change-management strategies from well-known researchers and practitioners across education. It was an eye-opening and engaging experience to try to cull, analyze and synthesize the work of these great thinkers, practitioners and thought leaders. (For those interested, the February 2004 edition of the journal is available online at www.sloan-c.org.) As I reflected on this research in relation to our work at SAS, combined with my work in conjunction with hundreds of conference presentations and consultations with colleges nationally and internationally – not to mention continuing and ever-interesting experiences as a parent of native technology users in education – the following 10 insights emerged. I offer them here for your consideration, discussion and deliberation as you explore the road ahead for your institution.

1. Consider many best ways

While educators value their ability to embrace complex ideas and conduct experiments with a host of interacting variables, it is stunning how often discussion about education models regresses into defending "the one best way." Research and practice increasingly make it clear: There is not one best way to teach, reach and learn – much less one best way to use technology tools. The effectiveness of learning in the classroom, online or in combination thereof is predicated on a multitude of personal, professional, technical and situational variables that make dictating the one best way to teach and learn about as useful as waxing poetic about the best haircut. Moreover, it is becoming increasingly clear that intervention and student support strategies are best tailored when based on a myriad of variables, including your institution's mission, the student's personality style, life situations, work loads, etc.

When working with K-12 school districts, community colleges and universities, it is essential that we bring an open mind and a willingness to embrace new insights. Indeed, SAS' impetus for creating a long-term intelligence architecture – our core competency – is to enable your institution to create a culture of inquiry, one in which people are willing to explore a wide range of possible solutions, supports and strategies. However, SAS technology can only do so much. The people, processes and culture have to be willing to consider many best ways if the insights that come from data mining or predictive analytics are truly to make a difference.

2. Remember the human touch

One of the most resounding findings and sentiments from research and thought pieces is the need to remember that learning is a human enterprise. And while technology is often demonized for dehumanizing education, in fact, it is often technology that brings the human interaction back into learning. For example, technology can create avenues for dialogue in large lecture venues through online discussions or simply via e-mail, or it can give a voice to students who would otherwise never participate in class discussions dominated by more verbally aggressive students. In addition, thoughtfully using analytics and on-demand data can deliver much-needed human services to at-risk students by analyzing performance and sending institutional resources their way. Still, as we rush down the road ahead, we have to be sure to slow down, look around, and bring our mindfulness and human orientation to the process. "Death by PowerPoint" is still far too common a phrase emerging from student focus groups. This call for increased focus on the human touch is echoed by educators across the K-Ph.D. spectrum.

Nowhere is it more important to be cognizant of the importance of the human touch than at a software company. Developing software solutions and working jointly with customers to implement these solutions to solve problems are continual learning processes. Rather than being a mechanical process in which software is produced, sold, distributed and installed in assembly-line fashion, SAS' business approach is one that is founded on the human element of supporting employees and collaborating with customers to form long-term relationships. SAS uses a simple but effective cyclical framework to ensure that interactions between company and employee, employee and customer, and customer and company are positive, successful and long-lasting.

As a first step, SAS makes great effort to ensure that its employees are treated very well and that they have what they need to operate effectively, both professionally and personally. At SAS, this means a work-life program that consistently earns the company a spot on *FORTUNE* magazine's list of the "100 Best Places to Work" and *Working Mother* magazine's list of "100 Best Companies for Working Mothers." More important than the industry accolades, however, is the fact that because SAS employees are treated as if they make a difference in the company, they do, indeed, make a tremendous difference. In the daily life of SAS employees, this philosophy translates into opportunities for personal and professional growth and a culture of trust and respect between company and employee. The results are quite telling: Satisfied and motivated employees produce SAS' extremely low employee turnover rate – approximately 3 to 5 percent annually, which is particularly excellent in the software industry.

A stable and happy employee base leads to the second phase of SAS' human-touch framework in which employees work ardently to ensure customer satisfaction. SAS has found that one of the leading elements of exceptional customer satisfaction is employees who not only develop the best software, but also provide premium customer service and establish long-term relationships. Whether it's promptly answering a technical support question on the phone, collaborating with customers during an on-site consultation or sharing best practices with others through SAS events and conferences, SAS employees always focus on making sure customers benefit from the full experience of SAS solutions, programs and services, an experience that extends well beyond the software itself.

The third phase of SAS' three-pronged approach is the fact that stellar customer satisfaction produces customers who are very loyal to SAS. In fact, a remarkable 98 percent of SAS' customers renew their SAS software licenses each year. Such extreme customer loyalty also translates into financial stability for the company, allowing it to invest more revenue into R&D for cutting-edge software development and to hire and retain the best employee minds in the software business. In short, we have learned from experience: Begin with the human touch and success will follow. That spirit is embodied in our work with your institution.

3. Champion digital democracy

According to Thomas Jefferson, "If a nation expects to live ignorant and free, it wants what never was and what never will be." This statement has never been truer than today in our world of hyperconnections, a world where gamblers, pornographers, and hate groups are the most lucrative purveyors of online tools. With such powerful influences becoming more sophisticated in how they use information technology, it is increasingly important for educators to also optimize their use of technology to help ensure a more informed and enlightened society. In an effort to define its role as an educator in the modern world, the strategic planning team at Valencia Community College (www.valenciacc.edu) was quite succinct: "America starts here." SAS is committed to helping students use technology to access learning and then to embrace learning beyond technology – critical thinking, problem solving, decision making, global awareness and community involvement – so that they may live not only well, but free.

Ultimately, SAS' focus on the human touch leads to more than just successful long-term relationships with company, employee and customer; it also produces tangible results of how technology can be applied to benefit humanity through a digital democracy. Learning through and beyond technology equips current and future leaders to channel the power and potential of the online age into a marketplace of ideas that is open for debate, sharing and collaboration. Whether it's supporting medical research in countless fields including AIDS and cancer, analyzing air quality, creating more accountable and citizen-centric governments, discovering and developing new drug treatments, or expanding student learning, SAS customers use technology to make positive and wide-reaching impacts across our global society.

The drive for digital democracy and a free, prosperous society begins in the classroom. Because of this fact, SAS explored the question of whether its expertise in producing technology and services could be used to enhance learning. After consulting with educators nationwide, SAS established SAS inSchool in 1996. SAS inSchool makes teaching more efficient and learning more profound by developing Web-based educational resources that complement traditional teaching methods in all core disciplines – for grades 8-14.

SAS inSchool's commitment to teachers is important because no one knows what will work to support learning in a classroom better than teachers. SAS inSchool looks to teachers to guide the planning and production process for all of its curriculum technologies. In addition, SAS inSchool focuses on content rather than the technology itself, specifically the content that is difficult to convey with conventional methods. As a result, information can be provided in an interactive way, allowing students to draw insights that may not be possible with a traditional textbook. However, the interactive nature of SAS inSchool technology should not be confused with entertainment. In fact, the goal is to use technology to make learning more profound and efficient while supporting traditional education objectives identified by teachers. Through the use of these curriculum technologies, students develop analytical and problem-solving skills that will support them in their future endeavors, as well as equip them to lead in the digital democracy.

4. Learn for a lifetime

Part of making this digital democracy work is our broad embrace of the value of learning for a lifetime. And it is not enough to learn *about* technology, we need to learn *with* technology to understand its true potential. Moreover, because of the abundance of learning and the tools that make learning more accessible, we are blessed with easily adaptable mechanisms to bring learning to our fingertips. Call it professional development, career advancement or personal growth – by any name, learning is now a lifetime activity. And it's not just the students who need to hear this call. More and more, our K-12, community college and university clients are not limited to improving just student learning. They want to improve learning across the institution. They are working with us to develop what private industry calls human capital intelligence strategies – creating contact and information systems to maximize learning across the organization.

SAS as a company hears this call for internal and external continuous learning for its employees as well as for its customers. From an employee perspective, professional development is an important aspect of SAS' corporate culture. Managers are called to mentor their employees and to work with them to consistently hone their skills through a variety of programs and skills-development courses. Similarly, SAS offers a wide variety of learning opportunities for its customers. SAS understands that just because a customer has purchased or implemented its software – whether in the classroom, for research or to drive strategic operations – the learning process between the customer and company has not ended. In fact, SAS values the fact that an initial decision to use SAS software represents the very beginning of a long-term opportunity for SAS to learn about the customer's changing needs and future goals and the customer's opportunity to continuously learn more about how technology can be applied in new ways to meet these emerging goals. Whether it's working with SAS Publishing to find books for professional or academic needs, taking advantage of SAS training courses or e-learning opportunities, trying the SAS Learning Edition to get a first glimpse of SAS software, pursuing professional SAS certification, viewing a SAS Web seminar or attending an executive conference to see first-hand how others are applying SAS technology, customers have multiple and varied opportunities to learn with SAS.

A powerful and clear example of how seriously we take our customer relationships is the annual SASware Ballot. Throughout the year, suggestions made by SAS customers are collected and placed on the SASware Ballot, which serves as an opportunity for all SAS customers to vote on the new features they would like to see added to the software. The survey is provided as a Web form, and customers click on the items for which they would like to vote. After the survey results are tabulated and analyzed, the top 10 customer suggestions for changes to the software are most always instituted. As a software engagement model that is based on long-term subscriptions, this continual learning loop is vital to helping us maximize the insight that customers gain by working with us.

5. Integrate your institution

Many institutions took bold steps to aggressively roll out online versions of their programs, degrees or new offerings to supplement their already robust distance learning programs. However, in this exuberant rush to innovate, many institutions created a separate infrastructure that does not integrate well with the rest of the organization. (Of course, this situation pertains to those institutions that have in-person operations.) This "deal with the devil," as some presidents call it, was made to facilitate growth and innovation without bureaucracy and tradition stifling the new and novel. The challenge is that students neither see nor care about this deal. Your institution is one entity to them. All they know is that these dual systems are cumbersome. They want a learning environment where they can mix and match programs – whether in person, online or through hybrid options – without needless runarounds or multiple registrations and fees.

The real challenge is finding the tools and techniques needed to coordinate often uncooperative data systems, learning management tools and other applications to support learning in a more unified and seamless way for students. That's where SAS can help. One of SAS software's primary strengths is its ability to integrate with an organization's existing IT infrastructure and work with data from any source. A great majority of the clients who work with us today cite their need to meet this challenge as a key reason for starting the conversation with SAS.

SAS' commitment to integrating technology with the learning process is clearly on display at Cary Academy, an independent secondary school in Cary, N.C. The school was founded in 1996 by our company's cofounders, Jim Goodnight and John Sall, and their wives, Ann Goodnight and Ginger Sall. The families wanted to try something big that would embody their shared vision for how technology could be used to modernize and improve the learning environment. They decided to build a school that would combine the best approaches already in use in the nation's classrooms and the best practices SAS had learned as a successful software vendor, using an integrated approach to technology to augment the learning experience.

Cary Academy opened its doors to area students in 1997. About 10 percent of the pupils were children of SAS employees. The school occupies a 52-acre campus next to SAS' headquarters. The independent 6-12 grade school, with an enrollment of about 700 students, manifests its founders' dream: low student-teacher ratio, technology that's fully integrated into both the classroom and administration, and a quality learning environment with a strong emphasis on a broad curriculum. As a result, every Cary Academy graduate has been accepted at a major college or university; the school was also named a No Child Left Behind – Blue Ribbon School in 2004.

6. Welcome thoughtful cultural balance

Conference presentations and articles on technology and education are replete with cues to pay closer attention to the cultures of our colleges and school districts as well as our strategies for technology implementation. We may choose the best technology tool, foster the most compelling asynchronous-learning partnership or install the most impressive financial intelligence suite. However, if these strategies and technologies are championed by true believers or attacked by caustic cynics, they can quickly be rendered impotent. It is clear that leaders of K-12 institutions, community colleges and universities are called to foster and support reasoned advocacy and thoughtful criticism while avoiding the extremes. This means tempering the hyperbole about the power of such tools as administrative systems, online learning, and yes, even enterprise intelligence systems.

We can't overemphasize the importance of this insight. Nothing we do at SAS can truly make a difference if an institution is paralyzed in dysfunctional, polarizing debate. Moreover, if we are "oversold" when we come in, it only sets us up for failure as we begin the hard work of engaging with your institution to develop a long-term intelligence system strategy. Our experience in working with companies, healthcare institutions, government agencies and educational institutions gives us a healthy sense of humility regarding the complexity of these efforts. Indeed, as a company founded by university faculty, we evolved from a culture of thoughtful criticism and we encourage it.

As we welcome balance, we realize we must honor the past as we move toward the future. It is clear that many of the best practices long associated with teaching and learning also apply in the online and asynchronous worlds. Not surprisingly, organization, clarity, participation, interaction, stimulating different learning styles, multimodal assessment, and making cognitive connections between learning material and learner experience are vital elements of online and hybrid learning. Working with SAS does not negate the value of what you have always done. There are insights that underpin your long-held values and practices that will likely be essential in our engagement. We know this and always support a more thoughtful journey together. Put simply, a dynamically balanced approach to organizational culture and strategic practice throughout research, planning, and implementation can make or break our partnerships with educational institutions.

7. Embrace expanding markets

Some are worried that these new methods of teaching and reaching students by using technology and intelligence systems will only hurt more traditional education. However, three articles – "Mainstreaming Distance Learning into the Community College," "Academic Redesign: Accomplishing More with Less" and "The Weariness of the Flesh: Reflections on the Life of the Mind in an Era of Abundance" – in the February 2004 *Journal of Asynchronous Learning* referenced above are wonderful wake-up calls to embrace expanding markets. For example, when it comes to online learning, there is little doubt that it can add much to our existing students' experiences. But even more important, online learning affords us the opportunity to make connections in new and exciting ways. For example, the fears that online offerings may cannibalize campus programs have been calmed as the data emerging from institution after institution demonstrates that students mix and match online and face-to-face learning experiences. And without the online learning experiences, the education needs of many students would not be addressed at all. In fact, we are not dividing the pie, but rather expanding it by offering online courses, programs and degrees. Moreover, online workforce education options provide training to those who could never have stopped their lives to obtain advanced certification or other more basic skills such as team building or leadership training.

As a global company with more than 40,000 education, business and government customer sites in 111 different counties, SAS clearly sees the power of expanding markets. In fact, there are more than 2,000 educational institutions worldwide using SAS for a wide range of technology applications. For example, colleges and universities are using SAS for student information systems, human resource solutions, financial management systems and institutional effectiveness programs. Similar projects are taking place at the K-12 level including data warehousing projects to help meet the stringent reporting requirements of No Child Left Behind. Top-ranked international colleges and universities are integrating SAS software into the curriculum of their business, public policy and education leadership programs to prepare the leaders of tomorrow with the skills that will make them successful in private industry and the public sector. Leading researchers at academic institutions are using SAS software to explore topics ranging from disease treatments, hospital patient care, the incidence of poverty, and instruction and educational programs.

Research and practice, education and industry – all are showing us that thinking in zero-sum terms is limiting. We are best served when we embrace and concentrate on these expanding markets, particularly in education. It's a chance to make a difference with millions who may not have ever been touched by your good work otherwise.

8. Dog the details

In addition to the opportunity that new technology affords, however, comes the added responsibility of dealing with difficult details. Security, privacy, financing, interoperability and standards all challenge us on the road ahead. There are compelling dialogues that we must have surrounding these issues. In particular, as our technology systems become prime-time elements of our programs and services, we need to ensure that they are up to standards. Dealing with these issues effectively will likely mean treating this infrastructure much like our other major systems – more thorough planning, documented and systemic implementation, careful evaluation, and external audits.

The importance of paying attention to the details is not lost on SAS. For example, it is a corporate expectation that SAS executives and managers be heavily involved in the day-to-day activities and operations of the company and the myriad of continuous learning opportunities. It would not be unusual to see a top-level manager or executive intimately involved in software coding projects or working very closely with a customer to ensure a smooth software implementation. While atypical for top-level management at many companies who might focus only on the "broader vision" and manage with wide brush strokes, the leadership at SAS understands that the details matter most because these very details represent serious concerns of SAS' customers.

There is also a great deal of proactive effort exerted on SAS' part to get the software's details right before it ever reaches the customers' hands (or computers). Rather than releasing software products that have bugs that are discovered – and dealt with – by its customers, all SAS products are tested extensively; the results are tracked continuously by SAS employees so that any bugs are found and fixed before the software is released. While paying attention to these details takes more time and effort on the part of SAS, such attention is vital. SAS customers are assured that the software they receive during a new product release is of the highest quality; they also know that they have access to appropriate documentation and training resources as needed.

9. Put learning first

The new and novel are so intoxicating. However, the resounding call from educators nationally and internationally is to use technology, not be used by it. Asking hard questions about whether or not technology innovations are improving and expanding learning is essential if we are to be most effective with our educational programs and practice. In essence, learning is our primary return on investment (ROI). For those who put learning first, asking hard questions about the effectiveness of programs is a must. This perspective provides the focus for all our efforts previously listed: to consider the many best ways, to remember the human touch, to champion digital democracy, to learn for a lifetime, to integrate our institutions, to welcome dynamic balance, to embrace expanding markets, and to dog the details. It is often a simple truth – learning must be at the heart of every policy, practice and technology – that brings clarity to our collective journey in education.

To ensure that SAS continues to put learning at the top of the list when measuring educational effectiveness, SAS enlisted the expertise of Dr. William L. Sanders. After more than 34 years as professor and director of the University of Tennessee's Value-Added Research and Assessment Center, Sanders came to SAS in June 2000 to lead its value-added assessment and research team. The result was the creation of a methodology known as SAS® EVAAS® for K-12, a powerful diagnostic tool for assessing schooling influence on student progress and a reliable diagnosis of growth opportunities toward a variety of academic milestones. With this tool, educators can identify at-risk students *before* they take proficiency tests, enabling schools to develop customized programs for these students to accelerate their academic growth. Thus equipped, educators are able to make more proactive and confident instructional choices and use their resources so that every student has the opportunity to succeed.

By using technology to measure student progress over time, educators now understand that technology can be used to put learning at the forefront of decisions rather than making decisions that are dictated by the latest technology. With this perspective, SAS works with educators to help them use technology in more effective and proactive ways so they can achieve the ultimate goal of improving and expanding student learning.

10. Envision exciting horizons

What a great time it is to work in education. It is not hyperbole to say that there has never been a time when education has been so essential and accessible, thanks in no small part to technology tools. Yet there are many questions for us to consider. What can we do as we take bold steps down the road ahead? Can we open the doors of education even wider? Can we improve the learning experience even more? Can we customize learning so that it efficiently and effectively engages students with little to no bureaucracy or wasted time? Can we inspire more civic participation and involvement? Can we fuel the engine of our economy? Can we help more people launch their own learning journeys? And in so doing, can we help them live better, freer and more fulfilled lives? Can we? While we don't have all the answers, we still welcome the questions.

Moreover, we in the SAS Education Practice look forward to the opportunity to work with you to envision these horizons. It is our mission to improve and expand educational opportunity. And we can only make this difference in partnership with you.

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