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The Future of Learning

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Contents

Writing About the Future of Learning 1

"Much Ado" About Learning 2

Starting Point 2

The Future of Learning Theory, Models, and Planning 3

Table I – Starting Point–the Future of Learning Theory, Models, and Planning 4

Culture and People 5

The Future of Learning Cultures and Learning Professionals 5

Table II – Culture and People, the Future of Learning Cultures, Professionals, and Audiences 6

Learning - Making It Work 7

Table III – Making Learning Work in the Future 8

Learning–Development and Design 9

Table IV – Developing and Designing Learning for the Future 9

Learning–Delivering and Measuring Learning of the Future 11

Quantifying and Qualifying Learning 11

Table V – Delivering and Measuring Learning of the Future 12

Learning – Into the Future 13

Looking at Learning in the Future 14

Table VI – Delivering Learning Into the Future 14

Conclusion 16

Bibliography 17

Appendix I – Saba Technology Solutions for the Future of Learning 18

Introduction

Over the years, we have come to expect the delivery of knowledge and information at light speed. Knowledge and information are our lifelines and the lifelines of the organizations we work for and with. Through physical presence, virtual contact, social networking and other means, knowledge and information come to us and from us, and from these interactions and the things we do, we continuously learn.

Alvin Toffler wrote, "The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn."[1] Learning is one of the major topics that make the critical difference between our success and failure, now and in the future.

W. Edwards Deming once said, "Learning is not compulsory but neither is survival."[2] The significance of learning, and learning about learning, is unquantifiable in its importance to who we are and what we do today and in the future.

This, then, is an article about the future of learning. And it is not as easy to write about as you might think.

Writing About the Future of Learning

Writing an article titled "The Future of Learning" offers an amazing opportunity to really review existing literature, information, and documentation on the subject. It was exciting to think that here was a chance to really research in-depth all points of view – academic, corporate, institutional perspectives both for profit and nonprofit – about learning's future. It afforded an opportunity to gather data, analyze the data, and form some conclusions of my own.

Or so I thought.

The problem with writing about the future of learning is that no matter what you read, or where you turn, learning is everywhere. It is ubiquitous. Whatever I read, whatever I reviewed, I could turn it into information about learning, and I learned from it. After reading, reviewing, and analyzing information from dozens of articles, books, web sites, documents, journal entries, authored thoughts, wikis, blogs, vlogs, moblogs, and more about learning, I have come to one startlingly revolutionary conclusion – you cannot define the term learning nor put the definition of this term in a box because it needs to be defined "in context."

The term "learning" means so many different things to different people that it is difficult to articulate a future about something (learning) that is so entrenched in everything. We "learn" from the time we wake up in the morning until we go to sleep at night. We learn during sleep when our "unconscious" brain takes bits of information we have absorbed during conscious-time and connects them to create either new thoughts, or in some cases, nightmares.

We learn continuously, and although this is not a new concept, I am more convinced than ever that it is true.

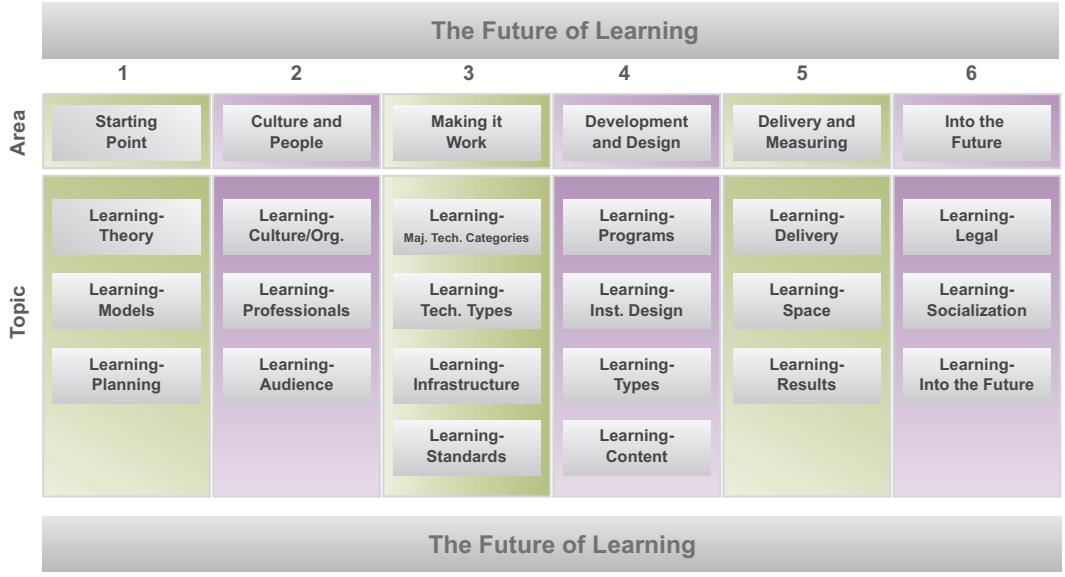
If we accept that learning means different things in a different context, what then is the future of learning? The future of learning is centered on pro-activity, immediacy, and continuity. It is personal, tailored, self-directed, consequential, and imperative. It is all these things and much more because it is 24x7, independent of time and free from the constraints of physical structure.

"Much Ado" About Learning

It seems that everyone has something to say about learning. Many important industry sources weigh in on the future of learning. Everyone provides input into trends, predictions, insight, and foresight into what learning was, is, and will be. Over a one-week period, I personally received e-mail from dozens of organizations offering their concept of some aspect of learning and the future of learning.

Because there is so much information available on learning, so many perceptions, possibilities, models to select from, and "experts" on the topic, my first step in writing this article was to assemble research, catalog, and categorize it into my own model. This dynamic model allows us to view learning in major areas – and given that learning is continuous and dynamic, this model is subject to change.

The focus of this article therefore, is on six major areas as shown in the following diagram, all related to the future of learning.



Starting Point

We begin to learn very early in life. There are many theories that support our ability to learn and how we learn from our earliest days. Learning theories and schools of thought on these theories have been instrumental in helping people construct models that help design learning. In the learning process, learning theories and learning models help us position our thinking as we begin to plan for learning.

There are many examples of starting points in terms of how academicians, scientists, learning researchers, and others view learning. A particularly interesting and relevant model comes from a behavioral theory – experiential learning or learning by doing.[3, 4]

For a long time one school of thought has been strongly promoting learning by doing through problem solving and experiential learning. The idea is that if you are presented with something you have to do and given some of the resources to do it with, you (or groups of people) will solve the problem. Some people would classify this as active learning.

Experiential learning, a methodology that has been around for decades, promotes learning through direct experience (action and reflection).[3] Students learn by solving problems, direct action, hands-on exercises, lab work, and direct application of information.

Experiential learning programs exist today at the K-12 levels, college and university level, and in professional clinical programs. This method allows for blended delivery technologies. "Knowledge is no longer just some letters on a page. It becomes active, something that is transacted within life or life-like situations. It starts to make teachers experience providers, not just transmitters of the written word. Students become knowledge creators (for themselves) as well as knowledge gatherers."[3] While experiential learning may cause significant changes to the foundation of the methods of formal learning, it provides a significant "combination of action and reflection…it empowers students to take responsibility for their own learning."[3]

Take the case of Sheryl Sandberg, a Google vice president, as reported in *Fortune Magazine* October 2, 2006. The learning experiences we might have in the future might include a great deal of experiential learning. According to the article Sandberg "recently committed an error that cost Google several million dollars."[5] Sandberg, responsible for "the company's automated advertising system,"[5] says, "Bad decision, moved too quickly, no controls in place, wasted some money." When she realized her mistake she went to inform Larry Page, Google's co-founder and unofficial thought leader.[5] After she finished apologizing, he said, "I'm so glad you made this mistake…because I want to run a company where we are moving too quickly and doing too much, not being too cautious and doing too little. If we don't have any of these mistakes, we're just not taking enough risk."[5]

The point is that this was a "teachable moment"[5] and one that Sandberg learned from. While many of us may not have the opportunity to make mistakes of this magnitude, the concept underscores one of the ways we will learn in the future – more learning by doing, even if it involves high risk and yields no tangible results at the time.

The Future of Learning Theory, Models, and Planning

Table I summarizes the three learning topics that fall under the Starting Point – learning theory, models, and planning. New learning theories and models are under development today, such as the ability to learn while sleeping or learning to control pain.[6] In the future we will see more research in these and other areas listed, as well as products and services that put theory and model into practice.

One of the most significant findings is that the future of learning has gone from theory and modeling, to a physiological, biological, emotional level. Scientists now study the brain and its reaction to various stimuli through advanced research methods such as the use of an MRI.[6]

The future of learning in these areas is really just beginning. As theories and models are tested within scientific methods, it will be interesting to see what else develops in the way we learn or can be taught to learn.

Integration of learning theories and models with the traditional concepts of learning planning is also taking place, as learning professionals begin to understand the need to provide learning the way people learn best, and not in a one-size-fits-all manner.

Table I offers more information about learning theory, models, and planning for learning today, as well as considerations for the future of learning in these areas.

Table I – Starting Point – the Future of Learning Theory, Models, and Planning

Learning Category	Description	Learning Today	The Future of Learning
Learning – Theory	Learning theories help us to understand how people learn based on physiological, biological, emotional, and other criteria	• Behaviorism • Cognitivism • Constructivism • Informal theories • Emotional intelligence	• Experiential learning • Neurological mechanisms/theories • Learning and sleep • Biofeedback and learning • Emotional intelligence
Learning – Models	Learning models are formulated to help understand methods by which learning takes place, is utilized, and is retained – by which knowledge and information is woven together to yield new ideas and thoughts	• Experiential • Strategic • Problem-based • Creative problem-solving • Optimum • Inductive • Continuous • Contextual • Cooperative • Oral tradition • Active learning • Passive learning	• Experiential • Problem-based • Group, team-oriented • Continuous • Blended • Device-to-device-driven • Adaptation of existing models taking into consideration the plethora of learning delivery systems available in the future • Consideration of learning that is embedded into the environment
Learning – Planning	• Learning planning involves the different components needed to create criteria, curricula, business plans, or other documents necessary to obtain necessary approvals for learning to proceed • Learning theory and models should be considered when determining learning planning	• Business plans • Business Process Governance • Cost/Benefit/ Analysis • Return on investment analysis • Total cost of ownership • Success criteria	• Much more significant focus and tied to overall performance of individuals and therefore the organization required for all learning initiatives

Culture and People

In their book, "Reframing Organizations," Bolman and Deal write about properties of organizations in four major areas: organizations are complex, surprising, deceptive (they defy expectations), and ambiguous.[7] The writers go on to say that environments "filled with complexity, surprise, deception, and ambiguity make it harder to extract lessons for future action."[7] Further, they say that, "…an increasingly turbulent, rapidly shifting environment requires contemporary organizations to learn better and faster just to survive."[7]

It is important now, more than ever, for organizations to foster a global culture of learning. Bolman and Deal write, "With stakes so high, organizational learning has emerged as a topic of increasing urgency."[7] The impact of learning on the culture of an organization and its people is an important consideration for the future of learning.

Think about the culture of your own organization, division, group, or team. Do you consider globalization, demographics, language, or geographic reach when considering what people need to know and learn to perform work, tasks, functions, roles, and responsibilities? Does your organization recognize the need for a learning culture and actively promote learning?

The Future of Learning Cultures and Learning Professionals

The learning organization of tomorrow considers learning a major priority without question, hesitation, or discussion. Organizations will actively promote learning, foster creativity and risk-taking and provide rewards for innovation and "thinking out-of-the-box."

In the Google example, "This is a company thriving on the edge of chaos. Google, an eight-year old company, is pulling in $10 billion a year in revenue and is worth about $125 billion…"[5] Here is a culture in a young company that fosters creativity, innovation, risk-taking – it is a true learning culture. Make a mistake and learn from it. While the Google culture may not work for every organization, a bit of it here and there might just allow for organizations to see what can happen if learning and invention are fostered and rewarded.

The learning professionals of today will be the learning professionals of the next few years, but even this is changing. With the adoption of the chief learning officer (CLO) role, many organizations came to realize the incredibly strategic value of becoming a learning culture. A CLO sitting at the executive table, truly part of a senior management team, can make an indelible impact on the success of an organization by addressing cross functional learning needs.

Think about the audience today and the audiences of tomorrow for whom learning needs are important. Who are they? How do they learn best? There are four generations, possibly five, that require consideration as you plan for learning now and in the future. Each has individual characteristics, wants, prerequisite knowledge, and needs. One size does not fit all.

Table II – Culture and People, the Future of Learning Cultures, Professionals, and Audiences

Learning Category	Description	Learning Today	The Future of Learning
Learning – Culture	Elements that comprise a group or organization's fundamental philosophy regarding learning – learning cultures typically foster knowledge exchange and sharing, and learning - Cultures that are driven from the top-down and from the bottom-up to foster and encourage people to take the time to learn	• Globalization • Demographic considerations • Language (spoken) • Language (terminology) • Geographic reach • Actively promote learning • Foster creativity • Foster risk-taking • Positive learning attitude • Actively support learning • Establish learning structure • Allow time for learning • Reward learning efforts • Reward contributions	• Mind set is continuous learning for global internal and external professionals associated with the organization • Build an infrastructure to foster organic (living) learning experiences • Recognize the unique opportunity to foster and encourage a continuous learning culture • Partnerships with vendors, schools, colleges, universities, and others for professional development
Learning – Professionals	Understanding the needs for people to manage learning, design learning processes, create and develop learning, deliver learning, evaluate learning success, and continuously assess learning is and will continue to be an ongoing consideration	• Chief learning officer • Learning vice presidents • Directors • Managers • Instructional designers • Instructors/trainers Teachers • Subject matter experts • Administrative professionals	The highest learning officer of the organization sits at the senior executive table
Learning – Audience	Profiling considerations are becoming more and more important as the audience for learning becomes wider and multi-generational	• Baby Boomers (78 million people) born 1946-1964 • Generation X (57 million people) born 1965-1977 • Generation Y (60 million people) born 1978-1994	• Baby Boomers • Generation X • Generation Y • Millennials (42 million people) born 1995-2002

Learning – Making It Work

To make learning work now and in the future, we need technology. There are technologies today that help us deliver knowledge, information, and data for learning purposes. In fact, there are so many technologies available for the dissemination of knowledge and information that it is almost overwhelming, and new applications are being developed and offered all the time. This means that the infrastructure of your organization is a vital concern for learning today and in the future.

An IDC study published in July 2004 states that organizations are "investing in long-term strategies to unify their information systems and offer better-targeted access to formal and informal learning."[8] *Training and Development Magazine* of May 2005 says in one of its articles, "Finally the range of technology-based learning opportunities is expanding beyond the traditional 'course/lesson' format to include online communities of practice, instant access to experts, searchable knowledge bases, and performance support materials embedded in the workflow."[9]

Two years later, we find that the idea and need for investment in an organization's infrastructure to support immediate access to knowledge and information, and to promote learning is no longer a topic for discussion. It is a given. The question becomes how an organization can do this; continue to do this and maintain a sophisticated infrastructure and make business decisions to determine what to keep behind the firewall, what to host (on-demand), and what to have delivered via an application service provider (ASP).

Making learning work considers the myriad technologies and delivery systems available in the world today and those systems that are under development and may be deployed tomorrow. How can organizations be proactive or react when necessary to make sure people have what they need in real time?

Efforts led by chief information officers, chief security officers and others focus on ensuring that people have what they need to learn. They must consider all the technologies their organization can support, the types of access their people, prospects, partners, and customers need to have, the infrastructure they need, the standards that are essential for the continuous performance of applications and technology within their organization; and the integration of technology to offer seamless access to knowledge repositories, databases, and whatever is needed for learning.

Professionals who focus on infrastructure and security must determine requirements that consider today's needs and tomorrow's expansion and growth. They need to work with vendors who have a long-term vision of how to help make organizations successful today and tomorrow. Vendors need to have an in-depth understanding and technical knowledge to offer guidance, advice, and recommendations based on a broader view of their prospects' and customers' infrastructure. This means that vendors will need not only to continue to be knowledgeable about what they have to offer and sell from a product and service perspective, but also learn about and know how to work with other products and services to provide a more holistic approach to making learning work in worldwide organizations.

Table III – Making Learning Work in the Future

Learning Category	Description	Learning Today	The Future of Learning
Learning - Major Technology Categories	Technologies that help to deliver knowledge, information and data for learning purposes	• The Internet device-driven technologies (PDA, cell phone, mobile learning devices, global positioning systems, other) • Computer delivered learning • Radio • Satellite • Video conferencing • Wearable learning technologies • Embedded technology delivery	• The Internet • The Semantic web • Combination device-driven technologies • Wearable learning technology Embedded in the environment iTV (Apple Computer's new device) • The $100 computer • "Things That Think" delivered learning (learning provided via the things we use in our transportation, homes, workplaces, entertainment, and other places we may be)
Learning - Technology Types	Learning technology types represent learning technologies delivered via major technology categories	Access by computer or device to the Worldwide Web (search engines, virtual classroom, portal access, instant messaging, text messaging, blogs, vlogs, moblogs, wikis, RSS, podcasts, music, photographs, art, data, other)	Growing and evolving number of learning sources accessible by computer or device-driven
Learning - Infrastructure	Learning infrastructure considers those facets of learning that are within the purview of IT, MIS, or professionals responsible for the architecture, infrastructure, and technical environment	• Scalability and data access Manageability • Centralized management Security • Hosted • Behind-the-Firewall Application Service Provision • Other considerations	• Move to blend delivery models such as Behind-the Firewall and on demand (ASP or Hosted) • Centralized data facilities that have the technical knowledge, support, and presence to support and service a "never-down, 24x7" learning culture
Learning - Standards	• Standards are important to learning and learners, although they are transparent to end users. • Consortiums and groups of people come together to create specifications, guidelines, software and tools, enabling things to work together now and in the future	• Advanced Distributed Learning (ADL) - (ADL produced SCORM; current ADL initiatives include: repositories and clearinghouse, wireless PDA based training, online gaming and more) • REF • World Wide Web Consortium (W3C) • IEEE • Other organizations	• Advanced Distributed Learning (ADL is growing beyond SCORM to provide a complete platform of support tools and services to the Dept. of Defense, Federal Agencies, and the Distributed Learning Network). • REF • W3C • IEEE • Other organizations • New organizations as needed to ensure things continue to work together

Learning – Development and Design

The future of learning is the future of what we can design, develop, deliver, implement, measure, and improve. The starting point within organizations is an understanding of what people need to do, what knowledge and skill they need to do it, what knowledge and skill they have, and the gaps between these areas. Once defined, learning programs for many people and tailored programs for individuals can be created.

Consideration of development and design includes a look at learning programs, instructional design, learning types, and learning content. Blended learning programs have been around for a long time, yet the term "blended learning" seems to captivate people as if it were a new invention. Whether new or old, blended learning is here to stay and will continue to offer learning options for geographically dispersed, multifaceted, diverse learning audiences.

Instructional design, a foundation for the development of learning content, has gone through transformation over the years. Differentiating between content, information, knowledge, documentation, and other forms will be minimized, but where learning is concerned, instructional design models will continue to play an important part.

Formal, informal, and embedded learning types are in vogue today, and there are many people writing and talking about identified areas of learning. While one could contend that the backyard fence and the water cooler were the best places to learn informally, a case could also be made for this "learning" to be considered formal and structured in the days to come. So the differences between these types will be present, but less pronounced.

An article recently written on OpenCourseWare states, "Five years ago today (April 4, 2006), in an unprecedented step toward making knowledge accessible worldwide, MIT (Massachusetts Institute of Technology) announced it would make the materials for nearly all of its courses available on the Internet."[10] The article continues,"Since then, MIT OpenCourseWare (OCW) has flourished beyond all expectations. Educators around the world are extracting pedagogy, ideas and teaching tools from the MIT course materials – including syllabi, course notes, assignments, problem sets and lab notes – to fine-tune their own offerings at their home universities."[10]

Free access and distribution of information to a global audience from the MIT OpenCourseWare initiative is what the future of learning development and design is all about. The effort has received worldwide acclaim and honors. It is something we all need to consider as we look at how tightly we hold on to our intellectual property and what we can and should allow others to have access to for learning purposes.

Table IV – Developing and Designing Learning for the Future

Learning Category	Description	Learning Today	The Future of Learning
Learning – Programs	Learning programs allow us to consider learning not just as a one-time event, but as a process to be fulfilled over time or on an ongoing and continuous basis	Blended learning K-12, college, university, institution – curriculum requiring syllabus and delivered over time	• Blended learning • Continuation of the K 12, college, university and institutional curriculum models using a blended learning approach • Just-in-time learning programs

Learning Category	Description	Learning Today	The Future of Learning
Learning – Instructional Design	• Models that provide instructional designers with a methodology for creating or adapting materials, information, and guides for learning • From Wikipedia, "Instructional design…is the analysis of learning needs and systemic development of instruction." (REF)	• Skinner stimulus-response method (c.1940s) • Bloom's taxonomy (c.1955) • Piaget (cognitive development) (c.1960s) • ABCD model (1962) • LOGO (c.1970s) • Dick & Carey – systematic design of instruction (1978) • Schank (constructivist simulations) (c.1990s) • Jonassen – Cognitivist problem-solving (c.1990s) • Clark – theories on instructional design and technical training (c.1990s')	• Adaptation of existing methods and methodologies for just in-time knowledge transfer and dissemination • Evolution of rapid instructional design models • Evolution of intelligent instructional design models for subject-matter-experts • Software that creates "training" from source materials instantaneously
Learning – Types	Learning types allow us to perceive learning in categories considerate of who we are, what we are learning and where we are learning it	• Personalized • Formal • Informal • Embedded (sometime grouped with Informal)	• Personalized • Blended • Much more significant focus on embedded
Learning – Content	Any source that provides information for learning purposes may be considered as learning content	• OpenCourseWare • Documentation/books • Training materials • Presentations • Mentoring/coaching • Games • Simulations • Video, film captured content • Animations/Graphics • Data • Other forms of original content/information • Content interoperability	• OpenCourseWare • Products for rapid, simple-to-use content development with built-in instructional design methodology • Distributed, simple templates, and wizards, customizable as needed but designed for ease of product use • Content interoperability considerations will no longer be a concern • Use of technology for group-created content that can be developed by individuals, reviewed by groups, and delivered quickly • Software products that continue to make development of multimedia and other complex forms of content easier

Learning – Delivering and Measuring Learning of the Future

What do Miles Jones, a consultant who is starting a new engagement in two days and needs to learn an application that will be rolled across an enterprise; Cynthia Andrews, a human resources manager who needs to learn about options for the company's new health insurance plan and then get information out to people; Peter Davis, a sales representative who needs to learn about a new product before going off to visit a new prospect; Pam Jenkins, a marketing manager who wants to learn what people think about the new collateral she created and then needs to let people know that it is available; and Josh Henderson, the CFO of the company who needs information about options for travel and expense programs and then to let people know about the new program he is putting in place, have in common?

Think about it for a minute…what do they have in common? They all need to learn about something, and then do something to transfer their knowledge very quickly so that they can deliver what they need to, when they need to.

As we consider learning delivery, space, and results think about how these five people might learn. Miles Jones could be anywhere in the world, have access to a telephone, the Internet, or the physical presence of subject matter experts. He might be able to work virtually with a subject matter expert who could mentor and coach him and get him ready for his engagement. He can learn in real time, dynamically.

Cynthia Andrews could use a blended model for her learning and then deliver her information physically to those people in her proximity–virtually using the online live virtual classroom, recording her session for future use, and via podcast or other means to get her information onto the mobile devices of her workforce.

Peter Davis might be in his car, hotel, airport, or at home and could access information from the Internet, portals, virtual coaching and mentoring sessions with live subject matter experts. He might have a DVD sales kit for his new product that contains all the information he needs to learn in preparation for his prospect visit.

Pam Jenkins, like Cynthia Andrews, can let people know about her new collateral via virtual session, physical presence, the Internet, and other delivery modalities. She can transfer the knowledge she has to those people who need to learn about it and continue to remind them of this information and how important it is to use it though the company blog, wiki, and web site.

The CFO, Josh Henderson, can send e-mail and stop there as he needs people to learn about a new travel and expense policy. Or, he can follow his e-mail with personal phone calls; physical presence; virtual online sessions; podcasts; and reminders in blogs, wikis, and behind-the-firewall corporate Internet sites.

All of these people could have used a Learning Management System (LMS) with Learning Content Management System (LCMS) capabilities to create areas where people could refer back to their information in all provided formats. The possibilities are endless for all of these people to do what they need to do and for those of us who need their information – to learn about it, retain it, and access it when we have questions in the future.

Quantifying and Qualifying Learning

How do you know that someone has learned something? Learner assessment, program assessment, metrics gathering and analysis, reporting, and learning development planning based on results will not disappear in the future.

Organizations are evaluated on performance. Investment in learning should also be assessed based on performance. Results of these analyses, both quantitative and qualitative, can be used as indicators for an organization's effectiveness in the development of their people – the intellectual capital of the organization. In evaluating the "return on learning investment," consider the stakeholders and look at benchmarks such as:

• Total learning expenditures

• Total learning expenditures per employee

• Investment in corporate learning initiatives vs. return on investment

• Productivity gains from investment in formal, informal, and embedded learning

• Sustainable increases in earnings margins over competition

Today there are models for quantifying learning results. Although more difficult, an assessment on the basis of nonquantifiable objectives, is important as well. Individual learners will still be assessed by testing; evaluations; and completion of exercises, problems, retention of knowledge over time, and other forms of measurement. The organization needs to determine measures by which it can grade itself as a learning organization as well.

Table V – Delivering and Measuring Learning of the Future

Learning Category	Description	Learning Today	The Future of Learning
Learning – Formal and Informal Learning Delivery	The formal delivery of learning to individuals or groups of people who either need, request, or towards whom non-requested information is directed constitutes the category of formal learning delivery Informal learning delivery comes from all of these categories as well as ad hoc associative learning such as the "water cooler"	• Physical classroom • Computer-based delivery • Web-accessed learning • Live and recorded virtual classroom, meeting, and/or conferencing delivery • Directed/non directed search engine learning delivery • Blended – synchronous and asynchronous access to learning • Electronic performance • Support systems that are evolving • Portals • Telepresence (Pebbles)	• Physical presence delivery • Live and recorded virtual classroom, meeting, and/or conferencing delivery • Blended – synchronous and asynchronous access to learning • Mobile device access • Wireless Internet access • Internet accessed push or pull learning delivery • Electronic performance support systems of various new types • Directed/non directed search Integrated, managed knowledge systems • Learning management/learning content management systems (LMS LCMS) • Other formal delivery systems Portals

Learning Category	Description	Learning Today	The Future of Learning
Learning – Space	The environment in which learning takes place has recently become subject to attention. Because learning is ubiquitous, learning spaces are everywhere. Like office space, there are specific designs that seem to foster learning	• Physical classroom (and design) • Virtual classrooms (delivered from cubicles or special designated rooms) • Video conferencing rooms	Learning spaces designed for the 21st and 22nd century – based on decades of learning, to promote learning – containing technology built into the environment and voice-enabled commands for living and learning environments
Learning – Results	The ability to assess, analyze, track, measure, and report the results of learning of all types	• Evaluations • Assessments • Tests • Practical, hands-on evaluation • On-the-job evaluation • Dashboard reports • Software to generate results	• Adaptive testing methods • Continuous reinforcement of learning, built into the learning either accessed by request or non requested • Simple and easy ways to measure the impact of learning on individual and organizational performance • Dashboard reports that go directly to those who need to see them on a regular basis • Immediate database analysis and reporting built into all learning experiences

Learning – Into the Future

A recent e-mail from Elliott Masie and Tom Crawford of the Learning Consortium, dated October 2, 2006, provided a "trip report" from *Wired's* NextFest Show in New York City. "NextFest features future and emerging technologies and applications."[11] A finding from the report states, "It's clear to me that the research has moved dramatically away from traditional computer-based technologies to in-the-moment and on-the-job support for both input and output devices. Whether it is measuring brain waves, dancing with robots or sending virtual hugs to a friend, performance support and assistance is the clear trend. Interestingly, this is the same trend we see in the training industry. Performance Support is back and maybe only now, with today's technology, will it be able to reach the level that people envisioned 20–30 years ago."[11]

In one sense this message made me think that learning is following the title of the movie, *Back to the Future*. Perhaps the future of learning will allow people who care deeply about learning to bring older ideas to implementation in ways not possible in the past.

In 1971 George Lucas and Walter Murch wrote a screenplay titled, "THX 1138". In this futuristic movie, learning is accomplished by an IV drip of the information. At one point in the film a character is describing learning as he knew it to young school-age children. He marvels that the bottles containing their learning are so small compared to those he had to use. "When I was in school it was all different. We had to lie in bed all the time. Advanced Primary Economics was a bottle about this big… (indicates a football sized object). It took a week."[12]

The first episode of *Star Trek: The Next Generation* (1987) introduced the holodeck, "otherwise known as a holographic environment simulator."[13] The Holodeck is introduced as a means for people to allow their imaginations to conjure up whatever may be their wildest and most creative dream. "Two of the main purposes of the holodeck are recreation and training."[13] The Wikipedia entry continues, "Despite malfunctions, holodecks are a highly valued technology in Starfleet because of educational and recreational impact, enabling users to partake in scenarios that would otherwise be difficult to enact under normal circumstances."[13]

Visions of learning in the future are vast and all-encompassing. Yet the message is very clear–learning is the future, if there is to be a productive future for us all. The continuous need to learn, the curiosity to discover, the satisfaction of fitting pieces of a puzzle together cannot be replaced. We are driven to learn from our earliest days and continue to do so throughout our lives.

While projections of the future abound, there is one constant in all of this for all of us…the future of learning is now.

Looking at Learning in the Future

Boston University is a host site for the Access Grid.[14] "The Access Grid is an ensemble of resources including multimedia large-format displays, presentation and interactive environments, and interfaces to Grid middleware and to visualization environments."[14, 15] The Grid has been in place since 1999.

The Grid is used for "large-scale distributed meetings, collaborative work sessions, seminars, lectures, tutorials, and training."[15] It is different from desktop collaboration experiences and was designed for "collaborative work in distributed environments,"[15] among other things.

This type of technology may offer learning opportunities for wider audiences in the future. If this type of technology can be brought into corporate environments, and more colleges and universities, learning can become a visual and auditory experience opened to many more people at one time.

In addition, all learning may be generated from a centralized system that could be networked and connected to other systems. Similar to the management systems today, this sole source would be where we go for all our search requirements, formal, and informal learning, knowledge, information, and access to whatever we need. The system will know what we need to learn and proactively send knowledge and information to so that we will be prepared. It will have presence awareness and it will be accessible through any device we carry.

Table VI – Delivering Learning Into the Future

Learning Category	Description	Learning Today	The Future of Learning
Learning – Legal	The complexity of the world today necessitates intellectual property laws for learning – patent, trademark, copyright and other considerations as well	• Intellectual property • Patent (technology, ideological) • Trademark • Copyright • Citation and referencing	The question of "who owns learning" will be addressed, although no answers may be easily identified

Learning Category	Description	Learning Today	The Future of Learning
Learning - Socialization	When people come together in physical presence or virtually for social purposes, learning is often part of the exchange. People learn about each other, from one another, through the exchange of information and ideas "A social network is a social structure made of nodes which are generally individuals or organizations." (REF – Wikipedia) Networking groups of people together often leads to learning and will continue to be a source of interaction that fosters learning in the years to come	• Communities of practice • Special Interest Groups (SIGs) • Social networking web sites (there are hundreds of these sites, spanning a gamut of topics and interests- Facebook, MySpace, Classmates.com, LinkedIn, Match com, Friendster are some of them *A more complete list maybe found by visiting,www wikipediacom and searchingfor a list of social networking web sites*	• Web 2.0 • Expansion of social networking web sites • Linking of sites to form more cohesive international units • Integration of sites with existing technologies for learning (LMS/LCMS), virtual classroom, other formation of more specific SIGs for learning other social and learning needs will create more team-based sites
Learning - Future	The future of learning is rich in possibilities for all of us, as well as the generations to come	• All of the above • More and seamless integration of technologies joining together in incredible ways • Realization of the power and value of existing technologies through the expansion of internal and external driving processes	• Myriad technologies joining together in incredible ways • Access Grid • Ad hoc networks • Mobile personal learning systems (Similar to global positioning systems but for learning) • Holographic learning requested on demand • Learning offered to us via our environment (non-requested) • Learning embedded ubiquitously into the environment • Blended audiences of people from all levels and all age groups coming together to learn International virtual teaching community • The truly international learning environment –virtual worldwide classrooms at all levels of K-12, college, university, institution, and corporate • Learning realized and implemented as strategic to success

Conclusion

The future of learning is an open book with many ideas under development, many concepts still in the design stage, and many pages yet to be written. Because of the rapid changes in technology, the myriad opportunities technology offers for testing ideas that could never before be tested, and the opportunities for our growth as knowledgeable, capable people, the future of learning offers something for all of us and for the organizations, institutions, and companies for whom we work.

In the future, successful organizations will build, maintain, evolve, and grow frameworks for enterprise learning based on defined business goals. Technology supports this framework. And strong, sound learning frameworks, mapped to business goals, implemented with foresight and vision for long-term, continuous learning, can turn an organization into an industry leader and model for business success.

Thomas W. Malone of MIT's Sloan School of Management wrote, "…Blogs and other technologies that make it easier for employees to share information, will enable, for the first time in business history, "the economic benefits of large organizations, like economies of scale and knowledge, without giving up the human benefits of small ones, like freedom, creativity, motivation, and flexibility."[16]

We will see so much more in the future than can be written in one article or in thousands of articles, and like anyone who makes predictions…only time will tell whether we have guessed right or incorrectly.

Learning…it is everything to all of us. And learning has a future rich with possibilities we have yet to explore.

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Appendix I – Saba Technology Solutions for the Future of Learning

Work with a vendor who understands you and your learning and human capital management requirements for today, and can help you grow to meet the needs of you and your learning organization into the future.

The future of learning is now!

HCM Practice Area	Business Solutions	From Saba	Technology Components
Learning	Sales and channel readiness Channel certification Customer education Regulatory compliance Corporate university	Saba Enterprise Learning Suite	Saba Enterprise Learning Saba Enterprise Content Management Saba Publisher Saba Certification Management Saba Learning Commerce Saba Analytics for Learning Saba VLE Connectors Saba Collaboration Saba Foundation
Performance	Automated performance reviews Integrated performance and learning Succession management Competency-driven HCM	Saba Enterprise Performance Suite	Saba Enterprise Performance Saba Performance Reviews Saba Analytics for Performance Saba Foundation
Talent	Succession management Competency-driven HCM	Saba Enterprise Talent Suite	Saba Succession Saba Collaboration Saba Foundation
Analytics	Reporting Analysis Information distribution	Saba Analytics	Saba Analytics for Learning Saba Analytics for Performance
Collaboration	Facilitates knowledge transfer Promotes informal learning Facilitates communities of practice	Saba Collaboration	Saba Collaboration

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