Silicon Valley
WORLD INTERNET CENTER

# The Knowledge Economy and Corporate eLearning:

## Current & Upcoming Developments in the U.S. Market

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## Executive Summary

The Knowledge Economy provides impetus for the rapid growth of the emerging eLearning industry. As the speed of change in technology and the general business environment continues to accelerate, companies must take advantage of the new Net-based infrastructure for learning if they want to maximize success.

On January 10 and 11, 2001, a Think Tank Session was produced at the Silicon Valley World Internet Center to examine eLearning markets, methodologies, delivery, standards and technologies. Several guiding questions for the Session asked the forty invited participants to look at how companies can leverage current eLearning efforts into the extended enterprise, how a company's value chain can take advantage of formal and informal learning content via the Internet, how Net-based infrastructures are best leveraged for learning and sharing knowledge with employees, customers and suppliers, and what the key developments and opportunities are in eLearning.

Our thinking about on-line pedagogy has advanced to complement what technology can offer us, but serious challenges remain.

The two-day Session was lively and packed with expert information about the economics of the learning market; the history of eLearning; techniques such as learning portals for providing broad access to curricula and tools; content design and creation; instructional methodologies and finally, and importantly, how to value the knowledge of workers and how training and education of workers impact profitability.

The way we think about and integrate eLearning has evolved since Criteria Referenced Instruction and Computer-aided Instruction emerged as concepts in the 1960s and 1970s. Because of advances in technoloy, there are many more possibilities now, than before, for group interaction, simulation of "high touch," and customized learning strategies. Our thinking about on-line pedagogy has advanced to complement what technology can offer us. Serious challenges remain, however. Corporate eLearning must address strategic business objectives of companies and impact the bottom line—the ability of the corporation to create wealth, ultimately, for its shareholders. Measurements must be developed to track the connections between learning, employee performance and profitability. The human capital of an organization, its workers, are the newly recognized, major assets of a company. How they and their knowledge are valued, recognized and managed has emerged as a major area for attention by managers.

The questions of how people learn, in general, and how they learn most efficiently on-line, still challenge corporations to examine their investments in and decisions about corporate training and knowledge resources. It has been estimated that perhaps as much as 85% of learning is informal and social. If so, how can corporate eLearning infrastructures be developed to support that kind of informal learning? Beyond that, no company, no matter how large, stands alone in the Knowledge Economy. A web of inter-dependency weaves through manufacturers, partners, suppliers, vendors, distributors, retailers, logistics providers, customers and sub-contractors that is, in turn, dependent on the quality of each party's knowledge. Leveraging that knowledge through collaborative eLearning may benefit all and, in the end, be the most time- and cost-effective approach.

## INTRODUCTION

In order for companies to remain competitive in an increasingly fast-paced economy, corporate workers' must have quick, effective access to new information and sources of knowledge. It is incumbent upon the corporation to provide the most viable combination of knowledge sources that will keep their human capital – their employee/worker base – the most competitive possible. Attaining that performance "edge" in a knowledge-based economy is a challenge, one that squarely faces corporate managers and officers in a business world swimming with electronically-enabled possibilities. That challenge lay at the core of a two-day Think Tank Session held January 10-11, 2001, at the Silicon Valley World Internet Center in Palo Alto, California. There, forty invited experts in the corporate eLearning world debated and dissected issues affecting the future of the corporate eLearning market in the United States. The following outlines the key points of that lively discussion and debate.

> Education and corporate learning for the new economy represent an $885 billion industry in the U.S. and a $2-trillion industry

## AN ECONOMIC FOUNDATION

The economic foundation of corporate education and eLearning has its roots in what is called the Knowledge Economy. The U.S. online market opportunity for knowledge enterprises is estimated by some to grow from $9.4 billion in 1999 to $53.3 billion in 2003. In order to thrive in this new market, a company must be able to hire and retain "knowledge workers."

Today, and in the future, workers' skills must be continually updated, often through corporate education. A person may learn a software program and have that useable knowledge for 18 months. After that, new aspects of the program are introduced and the worker needs to be updated. As a result of industry's need for employees with specific and up-gradable knowledge, knowledge services -- the combined education and corporate learning for the new economy -- represents an $885 billion industry in the U.S. and a $2-trillion industry globally.

Finally, because the knowledge and skills of employees are seen as benchmarks in calculating economic value and the potential of businesses, corporate eLearning can impact the value of a company. In 1980, the price-to-book ratio of the ten largest publicly traded companies in the U.S. was 1.2x. That is, the selling price of a company was valued at 1.2 times the book value of the company. In 2000, that value was 12.1x, or ten times greater. This multiple expansion correlates directly with the increased productivity of a company's intangible assets: its human capital, its employees.

## THE EVOLUTION OF ELEARNING

ELearning, electronically-aided learning, is viewed by many companies as a cost-effective way to deliver job-related learning or training. Over the last four decades of the 20th Century eLearning went through several phases of pedagogical development which changed the expectations for eLearning over the years. Today eLearning is viewed as a combination of eContent and eManagement where learning styles and preferences are combined with varying media and delivery systems to create the most compelling learning experiences.

Although "eLearning" as a term is relatively new, its genesis out of computer-aided instruction emerged as a concept in the 1960s. At that time, many proponents of electronic media believed that technology would one day allow students to be completely independent learners on electronic media. The current understanding is that people learn socially, and that the electronic media is best used as a component of a blended learning strategy.

During the Think Tank Session, Harry Wittenberg of

Schwab University (the learning division of Schwab) took the group down an eLearning Memory Lane, reminding them of CRI (Criteria Referenced Instruction) in the 1960s; CAI (Computer Aided Instruction) and CMI (Computer Managed Instruction) in the 1970s, when machines began to take over some of the responsibility of the classroom work. In the early '80s came VDI (Video Disk Instruction) where the computer delivered some content, and the visual medium emerged.

The late '80s saw the emergence of computer-based instruction and complete independence, with rich media and programs for tracking and reporting. In the late '90s, web-based training allowed time and place to shift and become less of a constraint. Later, electronic performance support systems looked at the breakdown of job skills and provided information for new design paradigms. "Over my time," said Wittenberg, "I've seen things going from 'high touch' moving toward 'high tech.' We have moved toward complete learner independence."

But eLearning no longer stands alone, on the outside looking in, while mangers strategize core business goals. With the new emphasis on worker knowledge, learning becomes one of the many processes that need to be managed to the success of the enterprise. Where is eLearning going at the dawn of the 21st Century, and what does it look like?

Brook Manville, Chief Knowledge Officer of Saba Software, presented several of today's most compelling principles in corporate learning. "eLearning," said Manville, former head of Knowledge Management for McKinsey, "is a combination of eContent and eManagement. We need to look across the entire spectrum from learning management, performance management, content management and human capital management to create a holistic approach to eLearning."

Manville said that content must be business-driven and linked to outcomes such as speed, retention, satisfaction, compliance, alignment, understanding, feedback, support and the social side of learning. The terminology used in eLearning must be the language of business, for it is the responsibility of the business to bring knowledge resources to its workers. He suggested that the concept of "learning," per se, turns off senior management and that learning must be put in terms of concepts that drive the company's bottom line.

"The CEOs I work with are not interested in 'learning' at all," said consultant Lance Dublin. "They're interested in performance and business results. Our language needs to change to adapt to the different place we're in."

Virtual classrooms do produce dramatic cost savings. That's why management's attention is still there.

Cost- and time-effectiveness are two key drivers influencing business decisions around eLearning. By being wise on structure and economics an elearning company can save their clients money and time while increasing the learning impact. And using the Net is not always the cost-effective thing to do. ß Alternative electronic and personal methods might produce better, more cost-effective results for the client. Despite his personal preference for high-touch learning methods, Wittenberg says there is an economic upside to eLearning. Virtual classrooms produce dramatic cost savings, which is why management's attention is still there. And feedback loops do drive continuous improvement.

The management of performance and business results to which elearning can be applied, includes:

- managing the brand (standards for handling the brand),
- mitigating risk (an airline company certifying baggage handlers),
- driving revenue (customer education as a profit center),
- and increasing channel alignment (channels trained to provide better customer service and increase customer loyalty).

"Provide the right knowledge to the right person at the right time," was Manville's challenge to eLearning designers. The goal is to promote continuous improvement of skills. A positive notion of "just-in-time learning" was not shared by all participants of this Think Tank Session. Harry Wittenberg questioned how well the just-in-time concept fits into the work culture. He noted that work demands interrupt and divert learners from eLearning, and questioned how effective just-in-time learning is in the work environment and whether or not people are actually using it. He also felt that culture – be it a corporation's culture or an individual's learning culture -- are two major elements that determine whether learning is successful or not.

In putting learning first, Manville suggested that content creators design by tried and true adult-learning principles. Wittenberg expanded on this and said his main concern is what he calls "the human factor," or motivation, finding the most teachable moment. "Motivation to learn is still commensurate with life-changing events. Why do we learn? It's because we really are forced into a situation where we have to learn. When it comes to job skills, it's something you need to do. So there's motivation." He noted that most adults really do not like survey courses and prefer single-concept learning. "Tell me specifically what I need to know and give me some concentration in that."

Another adult learning preference is that we integrate new ideas with what they already know more quickly than ideas that don't have a conceptual overlap with current knowledge and understanding. "If I have something to attach to," said Wittenberg, "if I have background that I can connect with it, I learn better, I retain it longer, I integrate it better. But if we just keep putting out new things all the time, it's really difficult for adults. Wittenberg said that adults prefer to be self-directed, but not necessarily isolated all the time. "It's 'Let me do it myself, but I don't want to be in a room all by myself.' Adults prefer to apply newly learned knowledge -- how-to versus theory."

> Combine different processes through a portal. This way different types of learners can use the processes that work best for them.

## Learning Portals and the Blended Approach

The blended approach to learning defines a process by which the learner or the content developer choose learning objects and pieces of curricula that best suit his or her learning need. Portals are the places to which learners can go and find those pieces residing. Manville suggested learning professionals make eLearning part of an overall blended approach. "Combine different processes through a portal," recommended Manville. "This way different types of learners can use the processes that work best for them."

Schwab University is building a learning portal, essentially a gateway to create a taxonomy of offerings. They, too, believe that the holistic approach is most likely to provide a true, human-capital-management solution to the client's needs. "We try to take everything that we have that is relevant to somebody and put it in front of them," said Wittenberg. Let them choose what they need instead of us programming what they need."

Wittenberg described how, at Schwab University, layers of technology support a comprehensive learning program, which allows him to help employees build solutions to their specific needs. By looking at the technologies available, he uses the most appropriate to tailor a solution based on what knowledge needs to be transferred.

At the bottom of the structure is the platform layer, and then the technology layer, including Oracle, HTML, streaming video, PERL and others. On top of that are application services, including Schwab's Learning Management System, content management, production services, graphics services, bulletin boards and building Web communities. On top of that Schwab University puts venues,

including Web-based training, video-on-demand, the static Website, video, audio and performance support tools. With that infrastructure in place, administrators of the eLearning portal can modularize their offerings as needed. Manville supported this type of "chunking, " or dividing the information into modular, stand-alone pieces. This method provides the ability to tag it for better targeting, updating and re-combinations.

Beyond the portal, Schwab moves employees into a Learning Management System (LMS) that provides curriculum offerings and enrollment, tracks employee histories, helps employees with certification and pre-requisites, provides the University with reporting and statistics, and manages the learning that is happening, both web- and classroom-based. The system also provides referencing tools that help employees who need information, not necessarily "education." Schwab University is also using video technology to train employees who would never get to the classroom at corporate headquarters to provide relevant, high-impact content to the farthest edges of the network.

These methods help ensure that the learning is learner-centric. The knowledge worker is the new unit of production. Providing dynamic learner choice, balanced by goal setting helps managers with gap analysis and tracking.

### Content Creation: Yours, Mine and Ours

Regardless of the technological advances supporting eLearning, the question remains: What is the best way to get content created? How much needs to be created in-house and customized, and how much can be adapted from outside sources? More and more, enterprises are publishing and combining their catalogues across boundaries. Content creation, management and delivery create learning distribution networks, much like other forms of eBusiness. "Customization is always the big point," remarked Wittenberg. "I can buy this, but how much am I going to have to customize it in order to get it to work for me?"

Bill Souder, IT Director of Global eLearning Technology at Cisco Systems, cautioned against creating content in-house. Souder's vision is that pieces of content will be "chunked" down into component pieces, and developers will choose the pieces and create their own models. Souder said the problem is that rich, ergo, expensive, media is what makes content compelling. In the future, that content will be distributed on the Internet as part of a global network. When content providers join forces and make content cost-effectively available because of the volume they are able to provide, then training and learning developers will be hard pressed to convince management that they should spend money, even on interns, to re-create content.

"You create your curriculum," said Souder, "but it's not custom development. And that service is provided truly on the Internet with rich media content distributed around, not the edges of your network, but around the Network at large."

"Blended learning is the buzz word of 2001," said Jan Bourret of the Hurwitz Group. "And blended learning does allow you to take the generic to set the foundation. Then the pieces that are specific to a Schwab or a Cisco can be customized. But to do the whole thing from the ground up is too long and too costly. Learning objects pull the whole thing together."

Wittenberg agreed with Bourret and said that meta-data will help build a huge global library of content inside the company first, and later that data will be available to others outside the company. Schwab University is beginning to study meta-data learning objects, re-use and recycling of content, and how instructional designers deal with the meta-data phenomenon that's building. Wittenberg suggested that the place to start is with what one already knows.

"Build your own schema first. Build your own taxonomy. Once you've built it, and you can design to it, then work with other groups and see where the overlaps are."

This way, he suggested, the sharing of tags will lead to continuous building.

When asked about the "shelf life" of content, Wittenberg responded that the templates behind the building of content are helpful. He keeps content for awhile, and then archives it as meta-data to allow people do go back and look for things they already know.

### High Tech / High Touch

"High-tech/high touch" is a phrase used to refer to the phenomenon that, as people interface more with high-tech electronics, they crave more connectivity to other people. Because of this phenomenon, traditional teacher-student/classroom-based training is still preferred by many learners over solitary learning. "Schwab University holds a lot of classroom-based instruction," said Wittenberg. "And they are always full. And there are always waiting lists. People want to come to class. They want to get out of their offices. They want to hear from the experts. They want to talk with each other. They want to learn from each other, which is really where the richness of education comes, certainly on an adult level."

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According to Wittenberg, high-tech is moving closer to high-touch. Video conferencing with participants in "same time, different place" brings people together at the same time through technology. Video conferencing feels like high touch because one knows the person on the screen is live, not just a digital image talking on the screen.

"My feeling is I want to get that high-touch back as much as I can," said Wittenberg. "That's really what people are screaming for."

Schwab University is trying to get high-tech and high-touch together. The company has a performance management course on-line. The content was basically written by a vendor for Schwab University and was designed to be not completely learner independent. "You call into a teleconference and a facilitator is the instructor of that course," says Wittenberg. "Then we buddy people up on the phone call and we say, 'Okay, you have two weeks to work through the content and to collaborate with your buddy.' At the end of those two weeks, they come back to the conference call. They dial in, and the facilitator has an hour and a half summary. The facilitator talks about what the students have learned, and takes questions and ideas. We group people together so there's a dynamic exercise, and then there's a wrap up." Schwab University is currently interested in building a bulletin board, where people can continue to ask questions of the instructor after the class.

There are other ways to address the need for humans to react with other humans; Schwab University's is only one. But there is a definite need for high touch in today's eLearning environment.

### The New Instructional Designers: Gamers Will Rule

Participants predicted that the people who design games, will be the new instructional designers, because they understand the paradigm of learning and motivation and they understand the new generation. "The kids who are coming up now are learning by this venue," said Wittenberg. "That's where I think the trend is going, and when I say 'Gamers will rule,' it's that design paradigm and the ability to code and understand and look at a model of learning in that respect." Gamers also know how to use the Internet and peer-to-peer (P2P) communications to create content for their games by pulling pieces of those games off the places they reside on the Web or, in the case of P2P, from peers. So the gamers are already employing P2P, chunking and blending in their work.

The tables on the following pages describe the Think Tank Session participants' estimations of what things are and are not working in eLearning.

*Table 1 A-- Technology and Infrastructure*

| Technology and Infrastructure | |
|---|---|
| **Working** | **Not Working** |
| • eLearning can be effectively used to focus on business effectiveness & measured with metrics geographically diverse.<br>• Modularized programs exist to provide "Lego" learning.<br>•Networks support catalogs of information from suppliers combined for the end-user. | • Support for Just-in-Time Learning<br>• It's more complicated than we think to make the technology work. |

*Table 1 B -- Technology and Infrastructure*

| Internet versus Intranet Delivery | |
|---|---|
| **Working** | **Not Working** |
| • Two-track learning systems with with delivery inside the company on a T1 line or to the home via the 56k modem.<br>• Scalable delivery via DSL/Cable/ISDN.<br>• Remote Hosting Solutions outside the firewall.<br>• Security Domains<br>• Separate Views for different levels of security.<br>• Employees and vendors with special numbers can access data. | • Intranet bandwidth & capacity<br>• Remote users can't access all eLearning resources.<br>• Firewall issues.<br>• Value network integrating data. |

*Table 1 C -- Technology and Infrastructure*

| Personal Computer-Based versus Net-Based | |
|---|---|
| **Working** | **Not Working** |
| • Both are working.<br>• PC-Based is media rich.<br>• Archival downloading of programs.<br>• eBooks.<br>• Modular. | • PC-Based distribution problem.<br>• PC-Based does not have access to growing and changing knowledge base.<br>• PC-Based doesn't track outside the system.<br>• PC-Based can't control the version the employee has access to. Does he/she have the latest version on his/her PC? |

*Table 1 D -- Technology and Infrastructure*

| Audio/Video | |
|---|---|
| **Working** | **Not Working** |
| • Audio is working.<br>• Video engages the learner.<br>• Hybrids work. | • Video is limited by bandwidth and access.<br>• Searching capability not available with video.<br>• Audio suffers from bandwidth latency. |

*Table 1 E -- Technology and Infrastructure*

| Wireless | |
|---|---|
| **Working** | **Not Working** |
| • Wireless LAN for Just-in-Time learning.<br>• xml for content repository | • Wireless, in general, not robust enough yet for learning, although it is working well for general communications. |

*Table 2 A-- Methodology, Pedagogy & Culture*

| Adult Learning Styles & Structuring of eLearning Systems | |
|---|---|
| **Working** | **Not Working** |
| • Social Architecture.<br>• Synchronous learning platforms<br>• Instant messaging | • Magic bullet.<br>• Linear design approach.<br>• Assessing learning styles.<br>• Capture and access to information. |

*Table 2 B-- Methodology, Pedagogy & Culture*

| Assessment & Measurement | |
|---|---|
| **Working** | **Not Working** |
| • One-time assessment for hiring and contracting | • Continuously pre-assessing the learner's needs. (Explain to me in the way I can hear.)<br>• Not recognizing training/learning is an asset & needs to be managed like an investment portfolio. |

*Table 2 C-- Methodology, Pedagogy & Culture*

| Culture & Impediments | |
|---|---|
| Working | Not Working |
| • Business pressures in [learning's] favor.<br>• Multiple, blended modalities of learning.<br>• Learning experts are exploring this issue. | • Teacher-centric vs. peer environment.<br>• Reward and incentive<br>• Defining new norms for the desktop environment. |

*Table 2 C-- Methodology, Pedagogy & Culture*

| Resources & Frameworks | |
|---|---|
| Working | Not Working |
| • Access to world-wide resources.<br>• Synchronized access to mentors and subject-matter experts. | • Automated self assessment systems.<br>• Designing for instruction vs. learning and performance sharing. |

*Table 3 A--* Content, Structure & Enabling Technology

| Self-Paced vs. fixed offerings; Group Exercises vs. Spontaneous Get Togethers | |
|---|---|
| Working | Not Working |
| • Facilitating the transfer of knowledge within a community.<br>• Projects work which meet the business case.<br>• Tools to facilitate the look & feel (XML). | • Long, "custom" courses.<br>• Measurement of completion rates.<br>• Knowing the learner and background, skills and capability.<br>• Engaging learners at all levels. |

*Table 3 B--* Content, Structure & Enabling Technology

| Object-Orientation & Standards | |
|---|---|
| Working | Not Working |
| • Standards.<br>• Learning objects and management.<br>• AICC - Airlines.<br>• SCORM - Military<br>• LRN "Learnativity.com". | • Multiple standards.<br>• Too much "objectizing." |

*Table 3 C*-- Content, Structure & Enabling Technology

| eLearning Management Systems | |
|---|---|
| Working | Not Working |
| • Tracking content -- lots of learner data.<br>• Docent.<br>• SABA.<br>• SmartForce.<br>• MindLever. | • 300 learning management system vendors.<br>• Inter-operability standard.<br>• Portability and specificity |

*Table 4* - Lessons Learned

| Lessons Learned |
|---|
| • Some problems can be helped by technology, some cannot.<br>• The industry suffers from an absence of standards.<br>• There is no one solution, for instance, self-service vs. more performance of a group.<br>• Cultural issues are difficult to change.<br>• Driven by pedagogy (I am the teacher, you are the student). When we know we need more androgogy.<br>• Still haven't resolved the measurement issue. |

### NEED FOR ROI METRICS FOR ELEARNING

Has technology's promise been realized? Many participants concurred that the results are unclear, and that we have yet to see good ROI models for eLearning. Ted Kahn of Capital Works, LLC, remarked that assessment of the effectiveness of learning needs to be thought of as a continuous and adaptive process, and not in terms of a performance review that is done at an isolated time in the continuum. Business needs a "learning-effectiveness index." Kahn suggested that the absence of this index leaves companies without a way of tying learning to shareholder value and managing this human asset.

Don Presson, President of IC Growth, spoke about new ways of measuring employee performance as related to economic profit. Presson defined EVA, or Economic Value Added, a concept that has been around since the early 1960s, as "net operating profit after taxes minus the cost of capital charge." Presson said that EVA does tie decision making all the way to shareholder value. He underlined that what has not been figured out yet is how to trace people all the way to shareholder value, although he suggested that process can be wired all the way to shareholder value.

"If you deploy your people in a value-creating process, and you link their ability to create value to one or more of three forms -- customer capital, intellectual property, or organizational capital -- and you link those [to one another], we think you've possibly solved the puzzle. Then you can actually measure the power of eLearning from an economic profit viewpoint."

Though the group agreed that the measurement issues around corporate eLearning are incredibly important, they acknowledged that most learning professionals do not have a good answer to the question, "How do you know if you're successful?" They also agreed that for the time

being, ROI measures do not work in this kind of a model. "Everybody's stuck right now," said Presson. "The question is, how do businesses measure the value of employees' ideas and other knowledge-based contributions, so that eLearning -- and all the different components that increase human capital capacity -- create shareholder value."

The lack of any proxy metrics in corporate learning and knowledge management has put a damper on innovation in terms of bold investments in learning practices in the workplace, according to Peter Henschel, Executive Director Emeritus, Institute for Research on Learning. "As long as we cannot answer the question of what is the economic value," said Henschel, "people are going to be timid about investing seriously -- and taking risks -- to support fresh approaches to learning. Failure to have new credible metrics -- even a small set that together create at least most of the picture of value - gets in the way of rapid progress."

## Conclusion

Over the two days of the Think Tank Session the group looked at the history and the future of eLearning, the pitfalls, expectations, illusions, and successes. They discussed whether the roadblocks to eLearning solutions are social, design-based or technological. And they saw the future in gamers, chunking and coming together globally through the Internet to create a rich repository of content and delivery modes. All seemed to agree that there is a need for the creation and implementation of metrics for ROI analysis of eLearning in order to help businesses measure the value of their workers and their knowledge. They also noted the need to move toward the social and informal aspects of learning and for the technology that can make that movement happen.

Finally, Manville encouraged eLearning providers to, "Do it. Try it. Fix it. Experiment with the future. Don't wait to have a 98-percent solution. Get that 60-percent out there and refine it in the market. This is a journey of learning about learning."

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