august 2000

Facts, Figures & Forces Behind e-Learning

Compiled and prepared by

learnframe

Table of Contents

EXECUTIVE SUMMARY

e-Learning is the convergence of the web and learning on all levels, whether it be elementary school, college, or business. Knowledge is now considered a competitive advantage and a company's most important asset. Many facts, figures, and forces behind e-Learning are not only causing excitement in boardrooms across the world but are also making Wall Street and the investment community take a closer look.

e-Learning is made up of several methods of learning, which are enhanced or facilitated by technology. As a component of e-Learning, web-based or online learning is likely to be the fastest-growing method for delivering education and training.

Megatrends in areas such as demographics, technology, globalization, branding, consolidation/privatization, and outsourcing will greatly affect the way we learn. These megatrends will affect all learning markets including early education, K-12 education, post-secondary education, corporate training, and consumer products and services. The dearth of skilled labor in the corporate world will only increase the need for e-Learning.

One of the biggest trends affecting the size of the e-Learning market is the astounding growth on the Internet. In the next three years, devices on the Internet are expected to grow from 147.4 million to 345.6 million. In the four-year period between 1998 and 2002, 223 million new users will be online worldwide. By 2002, 21.9 million more kids and 16.6 million more teens will be on the Web. Global online ad spending will reach $33 billion by 2004 and e-Commerce is expected to top the $1 trillion mark by 2003.

Many giants in the technology world are investing in and providing advanced products for and services tailored to the learning market. These companies, which are expected to make great inroads into e-Learning, include AOL, Yahoo, Microsoft, IBM, AT&T, Sun Microsystems, Oracle, and Harcourt.

The global education and training market is a $2 trillion industry, with $740 billion in the U.S. Approximately 10% of the $740 billion is "for-profit" business. The growth rate for the different education and training markets is projected at 10-15% but, at least in the corporate sector, e-Learning will far outstrip classroom training over the next few years, claiming almost half of the overall corporate training market.

Educational trends include home schooling, which is growing at 15% ($1.3 billion market). Ten percent of students are attending private schools ($2.6 billion market). The number of high school graduates is expected to increase 20% by 2008, while working adults represent nearly half of all post-secondary students.

Educational software was a $7 billion market in 1997 and is expected to grow by 14% over the next few years; $2.5 billion of the $6.1 billion supplemental educational materials market is sold to consumers, and educational toys are the fastest growing segment of the toy market. All these trends seem to reflect both demographic and societal movements toward providing a better education for anyone who wants to learn.

In the lifelong learner market, self-help books grew at a 21% rate from 1993-1997, and 87% of people that go online do so to pursue information about a hobby or lifelong interest.

By 2003, corporate training will expand to $62.5 billion with $15 billion in outsourced training. Currently, small- to medium-sized businesses are being overlooked in the emerging e-Learning space but probably not for long. Nearly 60% of the workforce is employed by small- to medium-sized businesses and employees of these smaller businesses are more likely to turn to the web for training resources.

About This Document

This document is an abridgement of several documents from various investment groups that are investigating e-Learning and expecting it to be one of the next big things to be revolutionized by the Internet. The investment groups represented in this document include Merrill Lynch, Banc of America Securities, USbancorp – Piper Jaffray, SunTrust Equitable, WR Hambrecht + Co, Thomas Weisel Partners, and Dain Rauscher Inc.

This document is broken into two parts. The first part answers the question, "What is e-Learning?" and focuses on the trends and forces behind e-Learning. The second part of the document addresses the numbers and the size of the learning market. Although the numbers mentioned in the various e-Learning reports differ, the opportunities remain extensive.

PART I

WHAT IS E-LEARNING?
&
WHAT ARE THE DRIVING FORCES BEHIND E-LEARNING?

WHAT IS E-LEARNING?

You can find nearly as many definitions of e-Learning as you can people willing to pontificate about any major industry, perhaps because learning is becoming so important to so many. The following are a few of the definitions of e-Learning:

> e-Learning is the convergence of learning and the Internet. – **Banc of America Securities**
>
> e-Learning is the use of network technology to design, deliver, select, administer, and extend LEARNING. – **Elliott Masie, The Masie Center**
>
> We define e-Learning companies as those that leverage various Internet and Web technologies to create, enable, deliver, and/or facilitate lifelong learning. – **Robert Peterson, Piper Jaffray**
>
> e-Learning is Internet-enabled learning. Components can include content delivery in multiple formats, management of the learning experience, and a networked community of learners, content developers and experts. e-Learning provides faster learning at reduced costs, increased access to learning, and clear accountability for all participants in the learning process. In today's fast-paced culture, organizations that implement e-Learning provide their work force with the ability to turn change into an advantage. – **Cisco Systems**

E-Learners Maximize the Medium

In a USbancorp – Piper Jaffray report titled *Helping Investors Climb the e-Learning Curve*, Robert W. Peterson, Mark A. Marostica, and Lisa M. Callahan define the "e" in e-Learning from the perspective of the user[1]:

What The "e" Is About	
exploration	e-Learners use the Web as an exploratory tool to access a plethora of information and resources.
experience	The Web offers e-Learners a total learning experience, from synchronous learning to threaded discussions to self-paced study.
engagement	The Web captivates learners by enabling creative approaches to learning that foster collaboration and a sense of community.
ease of use	Not only is the Web easy to use for learners who are already familiar with the navigation capabilities of the medium, but to learning providers as well, as they can easily make content immediately available to learners across all technical platforms *(Windows*, N4AC, Unix, etc.).
empowerment	The Web puts learners in the driver's seat with a set of tools that enables personalization of content and allows learners to choose the way in which

[1] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 13.

they best learn.

e-Learning vs. Online Learning

The *Corporate e-Learning: Exploring a New Frontier* report by WR Hambrecht +Co clearly identifies the differences between e-Learning and online learning[2]. e-Learning represents the whole category of technology-based learning, while online learning is synonymous with web-based learning. In this case, online learning is actually a subset of e-Learning.

> **e-Learning** = Technology-based Learning
>
> **The term e-learning covers a wide set of applications and processes, including computer-based learning, Web-based learning, virtual classrooms, and digital collaboration.**
>
> We define e-learning as the delivery of content via all electronic media, including the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM. Yet, e-learning is defined more narrowly than distance learning, which would include text-based learning and courses conducted via written correspondence. For the purpose of this report, the term e-learning is used synonymously with technology-based learning. Terms like e-learning, technology-based learning, and Web-based learning are defined and used differently by different organizations and user groups. Moreover, use of these terms is constantly changing, as the world of e-learning evolves.
>
> **Online Learning** = Web-based Learning
>
> **Online learning constitutes just one part of technology-based learning and describes learning via Internet, intranet, and extranet.**
>
> Levels of sophistication of online learning vary. A basic online learning program includes the text and graphics of the course, exercises, testing, and record keeping, such as test scores and bookmarks. A sophisticated online learning program includes animations, simulations, audio and video sequences, peer and expert discussion groups, online mentoring, links to material on a corporate intranet or the Web, and communications with corporate education records. In this report, the term online learning is used synonymously with Web-based learning or Internet-based learning.

New Way of Learning

In a SunTrust Equitable Securities report, titled *e-Learning and Knowledge Technology*, Richard C. Close, Rob Humphrys, and Brian W. Ruttenbur explain how important e-Learning will become[3]:

> Technology is increasingly changing our lives. First, it was the emergence of the desktop computer, now it is the Internet. It enables the ordinary person to have access to never-ending quantities of information and knowledge. Technology and the Internet empower individuals and facilitate a more active role in the educational process. As previously mentioned, the Internet has transformed the way people shop (B2C) and the manner in which businesses conduct transactions

[2] WR Hambrecht + Co, *Corporate e-Learning: Exploring a New Frontier* (2000), 8.
[3] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 9.

> with each other (B2B). Over the last several months, we have seen the evolution of a third area that we believe can have the most significant impact on all our lives. The e-Learning sector is just beginning to emerge. Just as the Internet has transformed the retail market, we remain confident that it will also transform the education and knowledge markets. As stated in a *New York Times* article summarizing John Chambers' (CEO Cisco Systems) comments at 1999's COMDEX Conference, ***"The next big killer application for the Internet is going to be education. Education over the Internet is going to be so big it is going to make e-mail look like a rounding error."*** As more individuals become connected, the Internet will penetrate deeper into our everyday activities, including the way we learn.
>
> The Internet has the ability to level the learning playing field. Whether it is a high school student seeking assistance with a geometry question or a father at home in Iowa who wants to get an MBA from Duke University's Fuqua School of Management's distance education program. Individuals now have the power to learn on their own time and at their own pace. E-learning technologies allow for the real-time performance, thus enabling individuals to spend time on their deficiencies rather than spending time on areas that they have already mastered. Not only will e-learning improve the achievement of students from kindergarten to high school, but also the productivity of Corporate America's workforce. We believe that the e-learning market will realize substantial growth over the next five to ten years. Moreover, we believe that as bandwidth, video, and voice technology continue to improve, the demand for e-learning products and services will grow exponentially.

SunTrust Equitable also points out that the trends indicate there is no stopping the new e-Learning and knowledge markets.

> IDC projects that a substantial percentage of the U.S. population will be active Internet users. Notably, IDC also forecasts nearly 60% of the U.S. population will actively use the Internet by 2003, up from just 15% in 1996. Although the rate of growth of individuals online is expected to stabilize somewhat, the actual numbers of individuals expected to become connected remains impressive.
>
> In 1996, there were an estimated 38 million individuals connected to the Internet. By 1998, the number of users increased to 82 million, growth of 116% over two years. IDC forecasts that the Internet population will grow to 158 million by 2003. The 23% compound annual growth rate in users from 1996 to 2003 is significant. Again, although the rate of growth in users should experience some deceleration, we believe that the time spent online per individual will expand. Based on a greater amount of time spent online, we remain confident that the growth in e-commerce revenue can meet current projections. ***The growth in users and the amount of time spent online is favorable for emerging areas such as the e-learning and knowledge markets.***
>
> **There is no stopping the revolution.** The number of daily activities impacted by the Internet will continue to rise. However, as more individuals connect and become accustomed to the benefits created by the Internet, its presence will become commonplace. Therefore, the e-learning experience will be second nature to the growing Internet population.[4]

The e-Learning Value Pyramid

The SunTrust Equitable report breaks down the different learning markets and then build up what they perceive to be the value chain in e-Learning in the form of a pyramid.

> The opportunities in the education and knowledge arena are impressive. With U.S. spending on education estimated at more than $700 billion, the industry is the second largest, behind

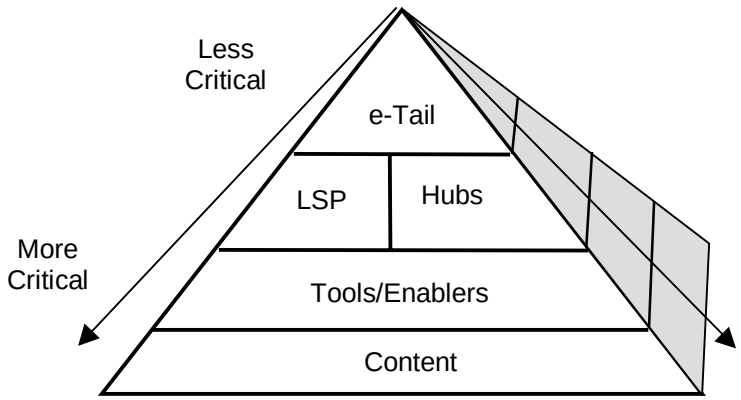
[4] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 9.

healthcare. As we look at technology product and service providers focused on the education and knowledge markets, we have divided the industry into four sectors based on the customers targeted. These include K-12 (K-12), post-secondary (P2), corporate training (CT), and lifelong learning (LL).

The opportunities in each sector are striking. Spending on the K-12 marketplace has surpassed $380 billion, with more than $30 billion spent annually on childcare and $352 billion spent on K-12 education. By our estimates, this is the largest of the four sectors. Although smaller than the K-12 market, the post-secondary sector eclipsed $230 billion in 1997-98. The Internet is already changing the landscape of the P2 sector. Despite being significantly smaller than the K-12 and P2 segments, we believe that e-learning will penetrate the corporate training market at a faster rate than the K-12 and P2 sectors. An increasing amount of education is provided in the workplace. ***The CT market has realized substantial growth, reaching an estimated $62.5 billion in 1999 compared to $60.7 billion in 1998. Notably, this excludes the estimated $40-plus billion spent by the government on training. The newest arrival to the education industry is the lifelong learner.*** This market size is much more difficult to quantify than the segments mentioned above. It would include individuals who purchase self-help books, participate in seminars (in person or online), or are just seeking to acquire new information or knowledge. ***We look for the LL sector to develop into a prominent segment within the e-learning marketplace as the Internet encompasses a larger presence in our daily activity.***

Given the tremendous opportunities that exist in the education and knowledge marketplaces, there has been a surge in companies targeting these markets. A tidal wave of capital has crashed upon the providers of e-Learning technology products and services. Specifically, we have identified more than $1.2 billion distributed to e-learning companies and more than $302 million in public equity raised during 1999. With roughly $300 million raised so far in 2000 and a current backlog of nearly $370 million in equity expected over the next several months, it appears that the e-learning public equity market is just beginning to emerge. At this time, we have identified more than 100 companies focused on the learning and knowledge markets. These companies provide a wide array of products and services to the four customer segments of the education and knowledge industry. In an attempt to evaluate the dynamics of the e-learning and knowledge technology market, we have divided the industry into five categories. These include: Content/Publishing, Tool-R/Enablers, Learning Service Providers (LSPs), Knowledge Hubs/Portals, and Educational e-Tailers. Although we have segmented the industry, in many cases companies fall into several of the categories mentioned above. For example, a company that provides a web-based learning program to a client may also have supplied the content and the platform.

The e-Learning Value Pyramid



Source: SunTrust Equitable Securities

Of the five segments focused on the learning and knowledge markets, we believe that content is the most critical component of learning through the Internet. In order for skeptics to be swayed to use the Internet as a tool to enhance learning, they must become comfortable that its content does not distract individuals, but increases the enthusiasm for knowledge. Learning tools and enablers are also important in the process. Providers of learning platforms and knowledge management systems are instrumental in the effective delivery of content. These companies supply the infrastructure needed to deliver content. The knowledge hub, e-Portals and learning service providers are the distribution channels for content providers. They distribute content through a platform to the end user. In order to be successful, these knowledge hubs and LSPs must make painstaking efforts to ensure that their customers consistently receive fresh content; otherwise they will fail to expand their customer base. Completing our pyramid of e-learning are companies focused on educational entailing. In many cases, representatives of the other categories also partake in entailing as a complement to their primary product or service. There are, however, single focused e-tailers as well. Companies such as bigwords.com and ecampus.com cater to the P2 sector through online textbook sales.[5]

Benefits of e-Learning

The WR Hambrecht report lists some general e-Learning benefits as seen from the corporate side of e-Learning[6].

Benefits of e-Learning	
Benefits	**Description**
Technology has revolutionized business; now it must revolutionize learning.	The need to transform how organizations learn points to a more modern, efficient, and flexible alternative: e-learning. The mission of corporate e-learning is to supply the workforce with an up-to-date and cost-effective program that yields motivated, skilled, and loyal knowledge workers.
Anywhere, anytime, anyone.	We estimate that approximately 80% of the professional workforce already uses computers on the job. Technical obstacles, such as access, standards, infrastructure, and bandwidth, will not be an issue two years from now. The growth of the World Wide Web, high-capacity corporate networks, and high-speed desktop computers will make learning available to people 24 hours a day, seven days a week around the globe. This will enable businesses to distribute training and critical information to multiple locations easily and conveniently. Employees can then access training when it is convenient for them, at home or in the office.
Substantial cost savings due to elimination of travel expenses.	The biggest benefit of e-learning, however, is that it eliminates the expense and inconvenience of getting the instructor and students in the same place. According to *Training Magazine*, corporations save between 50–70% when replacing instructor-led training with electronic content delivery. Opting for e-training also means that courses can be pared into shorter sessions and spread out over several days or weeks so that the business would not lose an employee for entire days at a time.
Just-in-time access to timely	Web-based products allow instructors to update lessons and

[5] Ibid., 11.
[6] WR Hambrecht + Co, *Corporate e-Learning: Exploring a New Frontier* (2000), 6.

information.	materials across the entire network instantly. This keeps content fresh and consistent and gives students immediate access to the most current data. Information can be retrieved just before it is required, rather than being learned once in a classroom and subsequently forgotten. *Training Magazine* reported that technology-based training has proven to have a 50–60% better consistency of learning than traditional classroom learning (c-learning)**.**
Higher retention of content through personalized learning.	Since they can customize the learning material to their own needs, students have more control over their learning process and can better understand the material, leading to a 60% faster learning curve, compared to instructor-led training. The delivery of content in smaller units, called "chunks," contributes further to a more lasting learning effect. Whereas the average content retention rate for an instructor-led class is only 58%, the more intensive e-learning experience enhances the retention rate by 25 – 60%.
Improved collaboration and interactivity among students.	Teaching and communication techniques which create an interactive online environment include case studies, story-telling, demonstrations, role-playing, simulations, streamed videos, online references, personalized coaching and mentoring, discussion groups, project teams, chat rooms, e-mail, bulletin boards, tips, tutorials, FAQs, and wizards. Distance education can be more stimulating and encourage more critical reasoning than a traditional large instructor-led class because it allows the kind of interaction that takes place most fully in small group settings. Another study found that online students had more peer contact with others in the class, enjoyed it more, spent more time on class work, understood the material better, and performed, on average, 20% better than students who were taught in the traditional classroom.
Online training is less intimidating than instructor-led courses.	Students taking an online course enter a risk-free environment in which they can try new things and make mistakes without exposing themselves. This characteristic is particularly valuable when trying to learn soft skills, such as leadership and decision-making. A good learning program shows the consequences of students' actions and where/why they went wrong. After a failure, students can go back and try again. This type of learning experience eliminates the embarrassment of failure in front of a group.

The SunTrust Equitable report also specifies benefits that are more specific to the learner and the content provider[7].

Additional Benefits of e-Learning	
Benefits	**Description**

[7] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 12.

Additional Benefits of e-Learning	
Benefits	**Description**
Learner Controlled	Technology has given the individual greater authority over the learning environment. Learning does not have to occur in a classroom. It may occur at one's own desk or the home.
Self-Paced	An individual may proceed through a course or program as the information is fully comprehended. Students can convert information to knowledge on their own timetable.
Uniformity of Content	The information delivered can be consistent to all users, therefore reducing the possibility for misinterpretations.
Customizable Content	Information can be developed with individual users in mind. Courses and programs can be created to deal with each individual's strengths and weaknesses.
Content Updated Quickly	Product and procedural changes can be updated and delivered in real-time. This increases the rate at which knowledge is acquired, which is especially important in the corporate market.

Source: Technology-Based Learning and STES

Howard Block, PhD, and Brandon Dobell, in a Banc of America report titled *The e-Bang Theory*, add a few more e-Learning benefits that are more technical or managerial in nature[8].

Learning Management Benefits of e-Learning	
Benefits	**Description**
Modularity of presentation	The content's architecture is modular, which facilitates different construction of learning events, both in design and length.
Manageable structure	The electronic infrastructure supports managed (and measurable) interaction between advisors and learners.
Ability to measure the effectiveness of program	E-learning software empowers administrators to track performance and measure ROI. In addition, monitoring usage by learners is simpler; i.e., the number of downloads per user can be measured. This helps training managers evaluate cost-effectiveness and provides assistance with license negotiations based on estimated usage.
Simpler data management	The rapid rate with which new learning products are introduced and older products become obsolete create a challenge for individuals charged with updating libraries. However, if a single version of each product is kept on a host, users get instantaneous access to updated components.
Greater storage capacity	The Internet host has much greater capacity than most physical locations or a user's hard drive. This allows learners access to more products and lets the advisor mix and match courseware activities to fit specific needs. Learners can

[8] Banc of America Securities, *The e-Bang Theory* (Sept. 1999), 8.

Learning Management Benefits of e-Learning	
Benefits	**Description**
	preview presentations of different courses prior to selecting one, or they can access a specific slide from thousands.
Individual education programs (IEPs) can be generated from a combination of the historical record of the students' prior learning (from monitored usage)	As students progress, information is delivered based on what they've learned and how they've performed. For example, a student would log onto the learning server and a customized course would be generated from the content database that knows which courses the learner took, how well she did, what her job description is, what problem is most pressing. This dimension serves to focus the curriculum only on skill gaps, saving organizations both time and money. A byproduct of IEPs, in our view, is increased motivation from the self-centered nature of the experience.

Source: Technology-Based Learning and STES

DRIVING FORCES BEHIND E-LEARNING

Several trends and forces are pushing toward e-Learning. Some are based on societal issues and demographics; others stem from the technological factors and shear critical mass. The areas that will be addressed in the following section include Megatrends, computer and Internet technology, corporate drivers, giants in the technology industry, and the continual drive to reduce the cost of business and improve return on investment.

New Economy Megatrends

Six major trends or megatrends are affecting education according to Michael T. Moe, Kathleen Bailey, and Rhoda Lau in the Merrill Lynch report titled, *The Book of Knowledge – Investing in the Growing Education and Training Industry*.[9] The megatrends are occurring in demographics, technology, globalization, branding, consolidation/privatization, and outsourcing.

Each megatrend is summarized. The summary is followed by a table depicting the megatrend's impact on each of the following learning categories: Early Education, K-12 Education, Post-Secondary, Corporate Training, and Consumer.

Megatrend #1: Changing Demographics

American society has undergone seismic shifts in the past few decades, dramatically changing the nature of our families, our workplaces and a myriad other aspects of our lives. These fundamental changes have come in five major areas: our ages, our families, our economic status, our ethnic makeup and our educational achievement.

The 20th Century's Tectonic Shifts in the Demographic Landscape	
Demographic Measure	**Change**
Age	The Baby Boom is probably the most significant demographic phenomenon of the 20th century, shaping all aspects of our economic lives. The aging of the 76 million Baby Boomers has major implications not only for them, but for the

[9] Merrill Lynch, *The Book Of Knowledge – Investing in the Growing Education and Training Industry* (Apr. 1999), 36-53.

	following generations of workers who must support them as they retire.
Family Status	The "disintegration" of the nuclear family began in 1970 and has only begun to stabilize. The rise in single parent families has, unfortunately, been a major factor in rising child poverty rates; over 20% of young children are poor.
Educational Achievement	Educational achievement has trailed the demand for knowledge-based skills. But now adults are heading back to school in record numbers.
Ethnic Makeup	Our nation is becoming more diverse – by 2050, "minorities" will represent 40% of the population.
Economic Status	These factors, coupled with the shift to a knowledge-based economy, have widened the gap between the haves and the have-nots.

Source: Merrill Lynch

Aging America

The Baby Boom is probably the most significant demographic phenomenon of the 20th Century, shaping all aspects of our economic lives. This generation of 76 million people born between 1946 and 1964 in many ways built the dynamic economy we have today, although increasingly that torch is being passed to the much smaller Generation X.

The aging of the Baby Boomers will become 3 significant economic issues, not only for them but also for following generations.

Competition for jobs at the top of the hierarchy from older baby boomers and, for the rest, competing with up and coming Generation Xers. In just four years for the first time ever there will be more workers over 40 than there are workers under 40. As *Fortune Magazine* notes, "At some point after 2010, as baby-boomers start to retire, companies will get desperate for workers--even older workers. But until then, there will be too many highly paid boomers competing for too few top jobs."

Competing with young and hungry Generation Xers isn't much easier--The harder Gen Xers work, the more they tend to resent all those 44-year-olds who put in half as many hours and earn more money.… 'You have to do more for young people because they are likely to turn over more quickly than older workers. Consequently, a lot of companies are putting young people on the fast track, so you have 28-year-olds running entire departments that 20 years ago were run by 55-year-olds,' explains Joe Gibbons, an H.R. consultant at William M. Mercer. 'That's a big change--it's a sea change.' (*Fortune Magazine*, Feb. 1, 1999)

Extending the working life of Baby Boomers: Boomers will begin to retire in about ten years, and with the advances of science, will live longer than any generation before them.

Concerns about our Social Security system are already high on our national agenda--will there be enough money to pay for a secure retirement for these people? Should we push back the retirement age? Will older Americans have the skills and flexibility to work in the new economy, and will they? These questions are key drivers for the growth in the corporate training market.

Making Generations X and Y Hyper-Procedure: Generation X may find itself stuck between a demographic rock and hard place--in their peak earning years they have to not only provide for themselves and their children, but also for the retired Boomers. The fundamental drivers of economic growth are growth in the labor force and productivity gains. Given that the labor force is

not going to grow in the near term, we need to ensure than both Generations X and Y are as productive as possible.

Family Status

Over the last 30 years, the nature of the American family has dramatically changed. Today only 7% of families resemble the stereotypical Ozzie-and-Harriet model of a never-divorced working father and stay-at-home mother. In 1960, only 19% of married mothers with children under age six worked outside the home.

Combined, an almost unbelievable 80% of U.S. families are either dual-income or single-parent households. This has significant implications for children in these families. Increasingly, a portion of the early education that used to take place at home with the child's mother is being outsourced to a relative or childcare provider. Thus, the need for educationally enriched, high-quality and affordable childcare has never been greater.

Economic Status

The new phenomenon of dual income families, coupled with great economic times, has masked a widening gap between the "haves" and "have nots." And the gap is now significant for some of our citizens. Over 20% of our children, for example, live in poverty, far more than in any other developed nation.

In our knowledge-based economy, intellectual capital is one of the few determinants differentiating employees. As such, the correlation between education and compensation has become crystal clear**.** ***The gap between those with college degrees and those without has grown dramatically, from 50% in 1980, to over 100% today. Put another way, the purchasing power of a 30-year-old man with a high-school diploma has dropped by over one third over the past two decades.***

What has helped compensate for the dramatic reduction of the purchasing power of the high-school educated breadwinner has been strong economic conditions and the increase in the workforce participation of women, up 39% since 1970 to 57% of all women.

Ethnic Diversity

American history has always been characterized by diversity, and the strength of new ideas from each wave of immigrants has enriched our economy and our culture. This process will continue into the next century, which, when combined with higher birth rates among certain groups results in a much more diverse population. By 2050, only 60% of the population will be white, down from 77% in 1990.

The bulk of the growth in the "minority" population will be the result of a growing Hispanic presence. California is often a bellwether for the future of the U.S., and in terms of racial diversity, this is certainly the case. One fourth of California students are limited-English proficient, and in grades K-3, that percentage is one in three. In many Los Angeles schools, Spanish is the predominant language. In still others, as many as sixteen languages may be spoken ahead of English. A push for language training, technology-based education in different languages, and training in cultural understanding will be important in this environment.

Educational Attainment

Ironically, at a time when education and training are among the few determinants of economic success, only 21% of American adults over age 25 have a bachelor's or higher degree.

These economic facts are driving "non-traditional" students back to school in record levels. Adults age 25 and over represent 43% (6.1 million students) of all post-secondary enrollments, up from 28% in 1970.

Another shift in our educational goals as a population--teens graduating from school are going to college at rates higher than ever before, creating great opportunity for post-secondary educators.

The impact of demographic shifts on the education and training industry are mammoth and long-lasting, as described in the following table.

The Impact of Demographic Shifts on Education & Training

Sector	Impact
Early Education	The childcare sector is growing and professionalizing as more mothers head to the workforce. Access for children in poverty is still a problem.
K-12 Education	Generation Y is working its way through our K-12 institutions. They are more diverse than ever before, and have the pressures of preparing for a new economy in old world schools.
Postsecondary	Demographics changes create powerful opportunity here. Generation Y is just starting into its college years, more high-school students are heading to school than ever before, and, faced with cold economic facts, many Gen Xers (and even Baby Boomers) are going to school in record numbers.
Corporate Training	Continual training and retraining will be essential to prolonging the workplace longevity of the Baby Boomers, and to ensure that Generations X and Y are as productive as possible to support the lengthy retirement of the Boomers as well as provide for their own retirements. (Ask any Generation Xer--they aren't banking on Social Security in retirement.)
Consumer	Parents and, increasingly, grandparents, with money to spend will make educating children a high priority. Their desire to provide them with every edge in the new economy will benefit consumer-oriented education products.

Source: Merrill Lynch

Megatrend #2: The Technology Revolution

Technology has transformed our society and economy. The impact on America corporations is profound and is explicitly evident by the increased investment in technology over the past three decades. In 1970, approximately 5% of corporate capital expenditures were for computer and data processing equipment, aimed at improving the productivity of human capital. By 1997, nearly 50% of capital expenditures by corporations were high-tech related.

The PC is as ubiquitous in business as the telephone or filing cabinet. At the corporate level, there is now one PC for every 1.3 employees. American homes are also embracing PCs. By 2002, 60% of households are forecasted to have PCs, up from nearly 50% in 1998. Recent studies have estimated that in families with children, PC Penetration is much higher, perhaps as high as 70% today.

Technology can take American schools into the 21st Century, but first we need to bring our schools into the 20th Century. Our K-12 schools have been slower to adopt technology, although they are beginning to respond to the opportunity. The students-per-computer ratio has improved from 16 students for every one computer to seven students per computer in the last five years.

PCs have achieved remarkable penetration compared to other technological innovations in the U.S., reaching a 25% market share in 15 years, versus 35 years for the telephone and 30 years for the microwave. But even more dramatic has been the wildfire rate of adoption of the Internet, which has reached 25% of the population in only seven years.

The explosion in Internet usage, achieving the most rapid rate of technological adoption ever experienced in this technology-hungry century, will continue. According to International Data Corporation (IDC), Internet access is forecasted to grow to 320 million users in 2002, up from 14 million in 1995. Moreover, e-commerce is expected to reach $400 billion by year 2002 from $8 billion in 1998.

Technology platforms such as the Internet have created tremendous opportunities for new business and education paradigms, ushering in a "New Economy" driven by knowledge and access to information.

The Emergence of a New Economy	
Old Economy	**New Economy**
A Skill	Life Long Learning
Labor vs. Management	Teams
Business vs. Environment	Encourage Growth
Security	Risk Taking
Monopolies	Competition
Job Preservation	Job Creation
Wages	Ownership, Options
Plant, Equipment	Intellectual Property
National	Global
Status Quo	Speed, Change
Standardization	Custom, Choice
Top-Down	Distributed
Hierarchical	Networked
Regulation	Public/Private Partnerships
Zero Sum	Win-Win
Sues	Invests
Standing Still	Moving Ahead

Source: Merrill Lynch

Where the resources of the physically-based economy were coal, oil, and steel, the resources of the new, knowledge-based economy are brainpower and the ability to effectively acquire, deliver and

process information. Those who are effectively educated and trained will be the ones who will be able to economically survive and thrive in our global, knowledge-based economy. Those who don't will be rendered economically obsolete.

As a consequence, education has become critical for both individuals and employers. In today's economy a four-year degree is just a prerequisite to participating in the industries of the future. Lifelong learning is now required for survival and economic longevity and technology such as the Internet, video-conferencing and satellite systems makes this possible.

The pace of change is dramatic. Under Moore's Law, the capacity of a computer chip doubles every 18 months, enabling more powerful hardware and software applications to emerge, and changing the requirements of the typical job.

Several factors are driving rapid change in the demands on human capital. The shift is obvious enough in information technology occupations where the focus is on the design, programming, maintenance and repair of the computing and communications infrastructure. These positions require a four-year undergraduate degree, advanced training or a graduate degree in a field such as science, mathematics or engineering. The changes in human capital demands may not be as obvious in positions at non-technology companies. However, as new technology-based ways of doing business, such as e-commerce, become more widespread, it will drive changes at even the most traditional of companies, and with it the composition of the labor force required to produce, service, and deliver goods and services.

Even labor-intensive manufacturing jobs are becoming highly automated and require higher-skilled employees to work sophisticated computerized machinery. Forty-two percent of production and non-supervisory employees in manufacturing and service establishments now use computers. Just think, a car mechanic's job is no longer as simple as looking under the hood. Mechanics now are required to understand complex onboard computers systems, as well as operate sophisticated diagnostic computers. As Vice President Gore recently observed, "A Ford Taurus has more computing power than the Apollo II that took us to the moon."

The impact of the digital revolution on all sectors of the education and training industry is significant, as summarized in the following table.

The Digital Revolution's Impact on Education & Training

Sector	Impact
Early Education	Child care will always require the human touch, although technology has helped us learn how children's brains develop, thus enabling us to improve early education. Also, computers (are) the second language of the New Economy, computer literacy is increasingly part of the early education equations.
K-12 Education	Kids love computers. They help children learn new things in new ways and allow them to access the resources of the whole wired world. Technology also helps teachers manage the instruction process so they can tailor each child's education.
Post-secondary	Technology can democratize education, making it accessible and affordable for millions of adults, enabling them to study anywhere, anytime in schools without walls.
Corporate Training	Through technology, training can be integrated into the workday, increasing its relevance and reducing its costs. Technology-delivered

	training is being adopted so quickly that by 2002, 55% of corporate training will take place that way**,** up from approximately 20% today.
Consumer	50% of households now have PCs, and the percentage in families with children is even higher. Educational software is the second most used function of the home PC (behind games) providing opportunity for educational software and online services growth.

Source: Merrill Lynch

Megatrend #3: Globalization

Our world is smaller than ever before, creating both stress and opportunity for corporations and the employees that work for them. International trade, the volume of international air flights and telephone calls and the percentage of corporate income that comes from overseas is higher now than at any time in our history.

Information technology has created new opportunities for how business is conducted, with one of the largest opportunities allowing businesses to participate in global commerce. Businesses can now enter foreign markets virtually overnight, as well as deploy resources and operations around the world to support these new markets. Information regarding new product introductions, sales patterns, input requirements and local market requirements all can be shared with any other division of the business instantaneously through companies' information networks. America's leading companies earn 30-65% of revenues from international markets.

For workers in these "virtual-global" businesses, this means that traditional in-store employees who provide sales, inventory and customer services can largely be replaced by information management systems, with knowledge workers servicing the "store." However, with these opportunities come great challenges. Economies that have an inefficient supply of skilled knowledge workers will see high-skilled, high-paying jobs lost to countries that can supply the needed skills. Those that have a surplus will find job opportunities opening up for their workers in business abroad.

The impact of globalization on the education and training industry will be to create tremendous opportunity, both here and abroad.

Globalization's Impact on Education & Training

Sector	Impact
Early Education	Increasing recognition of the benefits of early education are driving a more thoughtful approach to early education, getting young children ready for school.
K-12 Education	Preparing our kids to compete in a global economy means making our schools the best in the world. And with our children performing at or near the bottom of international comparisons, we have a ways to go.
Post-secondary	Our post-secondary institutions are the best in the world. They have an opportunity, even responsibility, to ensure that adults in the U.S. (and perhaps abroad) have access to the ideas that have made our economy so powerful.
Corporate Training	Corporations need consistent multi-lingual training that is accessible globally. Workers must also take responsibility for their own

	development, taking advantage of the training offered by their companies as well as using their own time to develop skills relevant in a global economy.
Consumer	Growing importance of education is universal, providing opportunity for global brands to evolve, particularly in supplemental products and services for consumers.

Source: Merrill Lynch

Megatrend #4: Branding

Branding will become increasingly important in the education industry, just as it has become a predominant means of building companies in other industries. In the education industry of yesterday, brands were built by delivering an exceptional education to an exclusive set of students. These brands have a dominant force in the education industry of today, with names like Harvard, Stanford, Princeton and Yale carrying significant authority as we enter a new world where education is delivered in a variety of forms.

In the knowledge economy there is opportunity for education brands to be built through inclusiveness and accessibility (not exclusivity and inaccessibility) when coupled with high-quality programs that have a consistent, positive impact on educational achievement.
Educational providers can form very deep, trust-based relationships with their students (and, when serving young children, their parents, too). Successful providers have intensely loyal customers, providing opportunity for these companies to extend that relationship through other products and services. Other "deep" brands include Disney, Nike and Mercedes-Benz. With Americans busier than ever before (evident by both parents working), we are increasingly making product decisions based on brands. Branding has become a short cut to identify quality and consistency.

Brands With Highest Level of Customer Commitment

- Apple Computer
- Disney
- Body Shop
- Harley-Davidson
- Mercedes-Benz
- Nike
- McDonalds

Interbrand describes deep brands as those that "have developed intimate relationships with their customers, usually on the basis of shared 'central' or 'higher' values. These brands might not always have dominant market shares, but they have real power to influence their customers." We believe in the next several years we will see a strengthening in educational brands, as well as through expanding the breadth of educational content along these lines.

Moreover, as lifetime learning becomes a necessity, the value of branded franchises will increase as students return again and again to the knowledge well.

Branding's Impact on Education & Training	
Sector	**Impact**
Early Education	With increased understanding of the importance of early education on a child's learning potential, parents are increasingly looking for quality care for their toddlers, identified by a strong education brand or NAECY accreditation.
K-12 Education	Infusing our schools with the characteristics of the new economy, in particular, subjecting them to the discipline of the free market, where they provide results or are not paid, will be a positive change.
Post-secondary	As choices proliferate in the post-secondary market, particularly through technology-based programs, students will associate Education with brands that signify strength in the areas they plan to develop expertise.
Corporate Training	As corporations look to outside organizations to manage their training programs, branding will be a factor in the early selection process. Companies themselves are also branding their own training content whether for internal or external use, to, for example, extend training to their channel organizations or end-users around the world.
Consumer	Branding has become a short cut for parents and students to identify quality educational products and services.

Source: Merrill Lynch

Megatrend #5: Consolidation

Consolidation is a strong global trend, as merger and acquisition activity hits record levels. In 1998, mega-mergers in the financial services, automotive production, pharmaceuticals and oil industries drove the total volume of M&A to upwards of $1.7 trillion, or not quite 20% of GDP. Technology-delivered training is being adopted so quickly that by 2002, 55% of corporate training will take place that way**,** up from approximately 20% today. These mergers happen for both strategic and financial reasons. They open up new markets and provide greater services to customers and leverage in research & development and marketing functions. At the same, time, most seek to reduce "overhead" costs, everything from top management to back office jobs that can be, for example, more effectively conducted using one merger partner's IT systems.

While consolidation used to be the hallmark of a mature industry, this is no longer the case, particularly in technology, where small start-up companies are acquired for technology and, as important, talented people. In some cases, acquiring a competitor is faster and easier than hiring and training scarce computer programmers, sales people and executive management. The hiring and retention of human capital is increasingly a priority for companies of all types.

Consolidation can also provide scale, and in the education industry, scale matters. The most visible example of this is Apollo Group, whose margins shot up from 2% in 1993 to nearly 20% in 1998 starting when revenues hit a critical mass of $100 million. Sylvan Learning Systems is a second example, with margins (including pooled acquisitions) expanding from 2% in 1993 to 15% in 1997. ITT Educational Services is currently enjoying this phenomenon, as well as Bright Horizons Family Solutions. This scale enables leverage on R&D, curriculum development, sales

efforts and SG&A. Scale can be achieved through organic growth or acquisitions or both, and (you can) expect consolidation in this sector for that reason.

A second driver of consolidation in this sector specifically is the desire of large, well-capitalized companies to enter this fast-growing and attractive industry. Mattel's pending acquisition of The Learning Company is the most recent example of this phenomenon hoping to expand on owned assets in the education arena. Publishing, corporate and staffing services and other companies are also buying into this sector.

Impact of Consolidation on the Education & Training Industry

Sector	Impact
Early Education	As parents shift their children to center-based care, choosing providers with high-quality educational content and brand names, we believe consolidation will finally come to the highly fragmented child-care industry.
K-12 Education	The challenge of developing an effective sales channel into schools will be an asset and barrier to entry that will drive consolidation in this segment.
Post-secondary	The ability to access 'best-in-class' education from anywhere at any time will challenge existing colleges and universities. Look for more specialization and consolidation as a result.
Corporate Training	The ability to offer a complete training solution to corporations taking a more comprehensive and proactive approach to training will encourage consolidation.
Consumer	Competition for retail shelf space and consumer mind share will drive consolidation and partnering in consumer products and services.

Source: Merrill Lynch

Megatrend #6: Outsourcing and Privatization

Changes in the structure of our organizations are impacting the need for education and training as well as the emerging education industry itself. The hierarchical organizational structure of a company is increasingly a relic of the past, falling out of favor with the ascendance of teams, and kiretsus, "business ecosystems." Rather than manage all aspects internally within a corporation, increasingly companies are developing a web of suppliers, customers and outsourcing partners that can provide specific expertise at the necessary time. Not only are the lines of authority blurred and changing within many organizations, the exact point at which a company starts and stops may become fuzzy, with intranets linking groups of related people and organizations.

In such an environment, companies are increasingly focusing on what they do best, partnering with other companies as needed to accomplish business objectives. Outsourcing may be a bane for workers filling these jobs in these companies, but it has created tremendous opportunities for other companies (and their employees). ***Nearly 90% of multinational firms outsourced some business in 1995 versus only 60% in 1992.***

Total revenues in the outsourcing market are expected to grow from $100 billion in 1996 to nearly $300 billion in 2001. This illustrates the need for workers to continually update their skills, think strategically about their careers and their businesses, and in so doing, create value for both.

Navigation and deregulation are also creating competition where none existed before, increasing requirements for accountability and results, customer service and cost management. Financial services, airlines, telephone service, gas distribution and now electric utilities, have all undergone fundamental changes in their governing structure.

Major Industries Have Been Deregulated	
Sector	**Year of Major Deregulation**
Airlines	1978
Financial Services	1980
Telecommunications	1982,1996
Natural Gas Distribution	1992
Cable TV	1996

In most cases, the result has been more innovation, better service and lower costs. There are many, many cases in our economy of how the discipline of the market has increased the dynamism of and improved the products of an industry. ***Our K-12 schools may be one of the few remaining institutions that have not undergone this change.*** While it can be wrenching, we believe that a reasoned introduction of market forces into the education of our children will result in very positive change.

Outsourcing/Privatization's Impact on Education & Training Industry	
Sector	**Impact**
Early Education	As the knowledge worker is increasingly freed from the corporate organization, companies seeking to attract and retain the mobile knowledge worker by providing family-friendly benefits such as corporate child care.
K-12 Education	Schools will increasingly look to outsource a portion of services as quality providers begin to offer measurable educational results at the same cost. Private management of public schools and charter schools should prompt a rethinking of what schools must do.
Post-secondary Education	These institutions will need to become more nimble and customer-responsive, perhaps increasing the degree of specialization and partnering with other universities as well as corporations to develop needed curricula. Students will increasingly demand relevant work-related skills.
Corporate Training	As corporations focus on core competencies, we expect training will be increasingly outsourced to one or a few high-quality solutions providers.
Consumer	Busy working parents are outsourcing a portion of children's education to private providers.

Source: Merrill Lynch

The Big Boom – Megatrends At-a-Glance[10]

Megatrend	Early Education	K-12 Education	Postsecondary	Corporate & IT Training	Consumer Products & Services
Demographics	60% of moms with children work	Enrollment in K-12 has increased 15% this decade with Generation Y	More high school students heading to college than ever before as well as increase in working adult students	Continual retraining of baby boomers	More children with parents – and grandparents – concerned about their education futures
Technology	Computer literacy is today's second language	Kids love computers/ valuable school tool	Technology can democratize education	Increasing access and relevance while reducing costs	50% of households have PCs-up to 70% of households with kids
Globalization	Recognition of importance of early education worldwide	Preparing children to compete in today's global economy	Opening our post-secondary schools to the international market	Consistent, multi-lingual training that is accessible globally	Parental concern for children's education increasingly universal
Branding	NAECY accreditation is the hallmark for quality	As charter schools and voucher programs proliferate, brands will serve as differentiating factor	Best brands will capture mind share	Brand name content is king	Brands enable 'short cut' decision making for parents
Consolidation/ Privatization		Need for sales force will fuel consolidation in the K-12 industry	Scale matters	Convenience of one-stop shopping demanded	Competition for shelf space and marketing mind share
Outsourcing		Accountability will push schools to providers of best practices	Students need post-secondary schools to have effective, career-oriented education	Focus on core competencies creates opportunity for training providers	Busy parents look to outside tutors and products to help educate their children

Source: Merrill Lynch

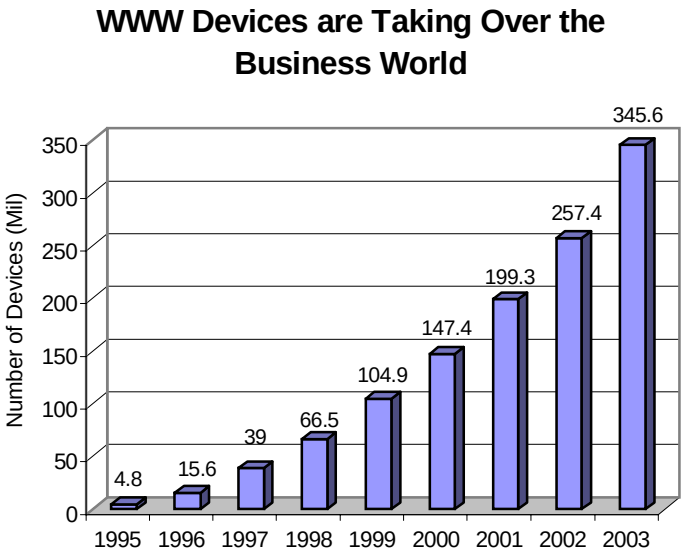
Drilling Down into Computer and Web Trends

The greatest driver in the technology megatrend is the use of the Internet, and it is starting to have a great impact on everyone. USbancorp – Piper Jaffray points out the incredible growth in devices being connected to the Internet.

> The explosion of the Web has drawn an enormous amount of media attention in recent months. With an estimated 72.6 million American adults already wired to the Internet, and an additional 40 million planning to go online, the Web has become a staple of our daily lives. Roughly one-third of American Internet users go online and one-quarter of the U.S. adult

[10] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 53.

population use e-mail every day. At the end of 1998, approximately 37 million U.S. adults used the Internet from home on a daily basis, compared to only 19 million in mid-1997.[11]



Source: IDC 2000

Internet Factors Driving Growth and e-Commerce

The SunTrust Equitable report concludes this overview of the Internet's impact with this statement: "…Ultimately we believe the improvements on how we learn will be the single greatest change that the Internet has on our lives."

> The emergence of the Internet is to the nineties what the advent of radio and television were to the twenties and fifties; however, the Internet's influence on our daily activities will be far greater. The Internet has emerged as the most powerful commerce, communication, and information medium of all time. International Data Corporation (IDC) forecasts that there will be 320 million Internet users worldwide by the end of 2002, up from 97 million at the end of 1998. Several factors are facilitating this substantial growth:
>
> - A large and growing base of installed computers in the home and workplace.
> - Network security, infrastructure, and bandwidth improvements.
> - Advances in the speed of personal computers and modem performance.
> - Cheaper and more reliable access to the Internet.
> - Consumer acceptance of online commerce.
>
> In the Internet's short history, we have seen the opportunities it has created for businesses focused on consumers, the B2C market. Now, we are in the midst of the witnessing the changes the

[11] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 24.

Internet will have on the way in which businesses interact. The opportunities for B2B commerce are yet to be fully recognized. Although the Internet's impact on commerce in both the B2B and B2C areas will be notable, ***ultimately we believe the improvements on how we learn will be the single greatest change that the Internet has on our lives.***[12]

Announcing the Arrival of e-Learning

USbancorp – Piper Jaffray identifies the association between technology and web growth and the opportunity that emerging with e-Learning.

• The Internet has established itself as the technology development of this decade:

- An estimated 72.6 million American adults are already wired to the Internet, and an additional 40 million are planning to go online.
- Worldwide, 350 million Web users are expected by 2003.
- By 2002 the number of kids on the Web is expected to increase to 21.9 million followed by the number of teens at 16.6 million**.**
- Global online ad spending is expected to reach $33 billion by 2004.
- By 2003, e-Commerce is expected to grow to over $1 trillion.

• The Web has electrified learning by helping organizations create, enable, deliver, and/or facilitate lifelong learning. We believe e-Learning will prove to be the "killer app" on the Internet.

• From a macro level standpoint, the time is right for e-Learning:

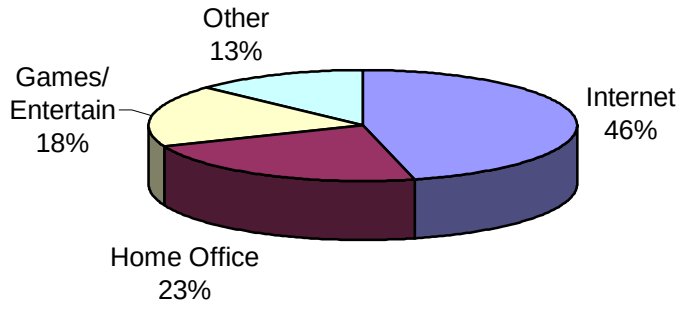
- Companies and individuals everywhere are moving to the Web as the vehicle for life-long learning, and no one dominant player can lay claim to the lifelong learning marketplace.
- The e-Learning market opportunity is huge.
- Our economy has become knowledge-based.
- Changing demographics have heightened the demand for learning services.
- Political winds are blowing toward the need for a stronger focus on learning.
- The rapid growth and ubiquity of the Web have morphed it into a powerful learning platform.[13]

[12] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 5.
[13] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 7.

Notable Internet Trends

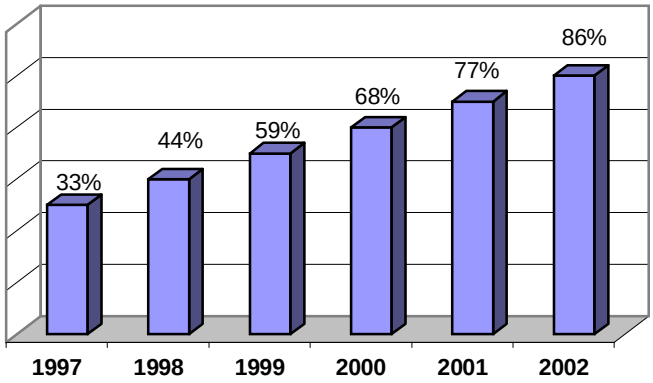
Several Internet trends indicate that the environment is ripe for e-Learning. Among the trends (reflected in the following graphs)[14] is the increasing use of computers, both at home and at the office, to access the Internet.

Primary Use for Home Computers



Soure: Internetstats.com

US Business PCs Using WWW
1997-2002

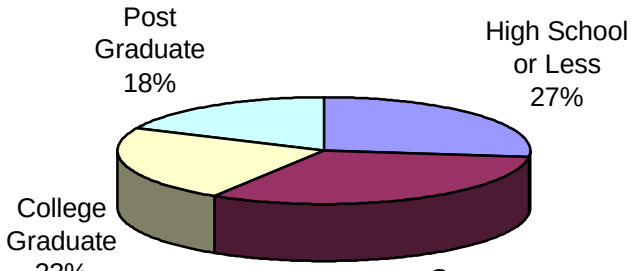


Source: IDC's Global Market Forecast for Internet Usage and Commerce

Both the education levels and the ages of Internet surfers is fairly diverse, indicating that a wide range of learning needs and dynamics are at, or could be at, play in e-Learning[15].

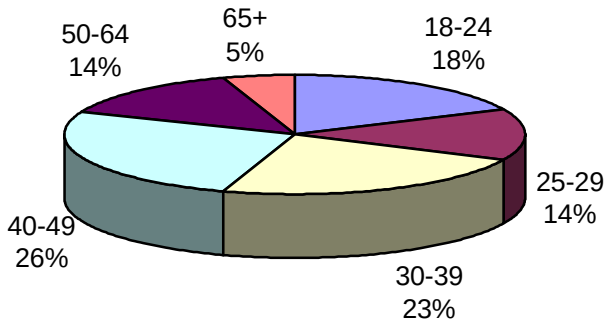
[14] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 25 and 81.
[15] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 25.

Education Levels of U.S. Surfers



Soure: Internetstats.com

Age Breakdown: % of Total U.S. Internet Users

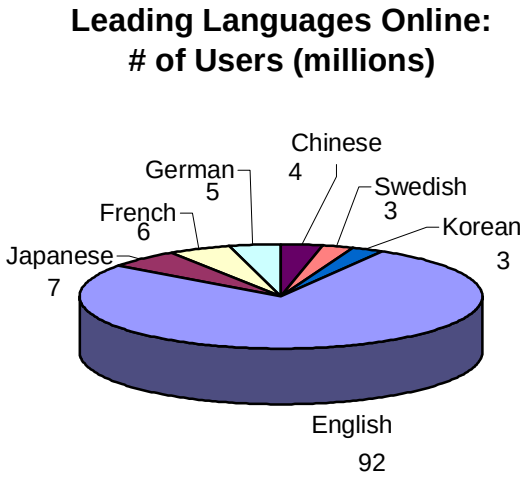


Soure: Internetstats.com

International Markets to Propel Growth of the Web

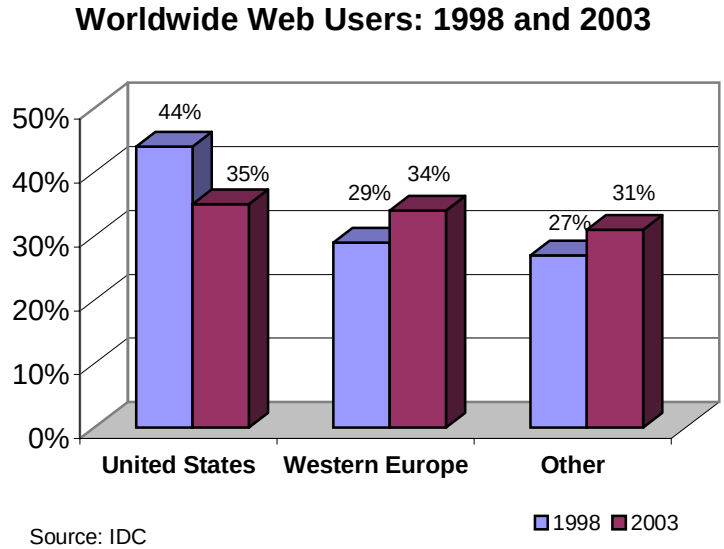
The United States and other English-speaking countries dominate the Internet; however, the trend will move more to an international community. English will still maintain its dominance as the preferred language, but the other international web trends indicate that the international market will eventually overshadow the United States[16].

[16] Ibid., 26.
[17] Ibid., 26.



Soure: Internetstats.com

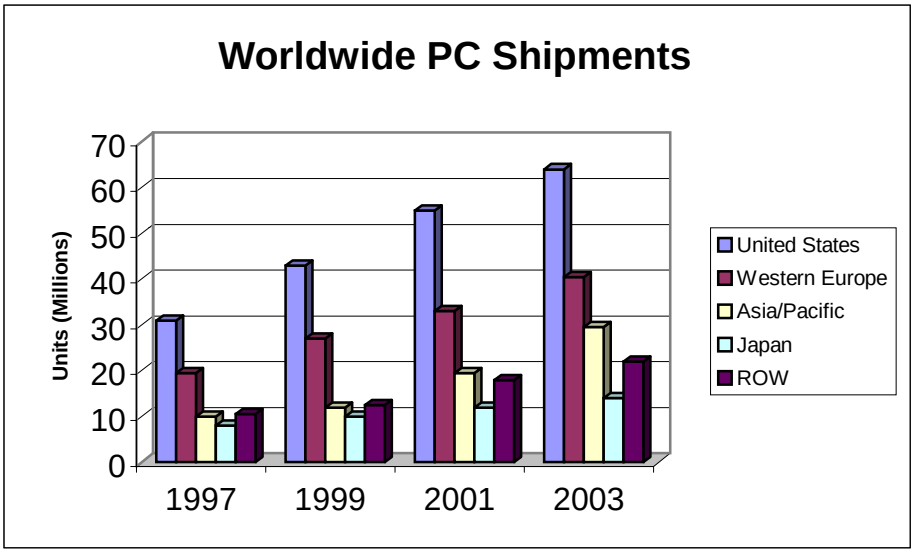
In addition to the Web's dramatic growth in the United States, international markets hold promise for further, rapid growth of the Internet. According to IDC, the percentage of non-U.S. Web users will grow from 56% in 1998 to 65% in 2003. Europe, in particular, has the potential to become a larger Internet market than the United States.[18]



Source: IDC

SunTrust Equitable also refers to IDC in the following graph to indicate the number and growth of PC shipments worldwide.[19]

[18] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 26.
[19] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 7.



Increased Internet Usage

In the Dain Rauscher report titled *eServices – When Every Minute Counts*, Theresa A. Matacia presents the case that increased Internet use throughout the world will continue to grow the opportunities for e-commerce, e-business and e-Learning.

> With the pervasiveness of the Internet and the emergence of attractive service offerings, there is a burgeoning movement among consumers to get connected. According to the Computer Industry Almanac, Internet access among the North American population is expected to climb significantly from 28% of the population in 1998 to just under 50% by the end of next year. By 2005, it is estimated that almost three-quarters of the North American population will be Internet subscribers. ***Growth outside of North America is expected to be even more significant over the next several years. These projections could prove conservative once high-speed, broadband connections become widely available, driving an even greater proportion of consumers online.***
>
> **Greater connectivity should drive more transaction business over the Web.** As more consumers get connected and opt for the speed and flexibility of broadband access, we believe that they likely will expect the same from their Internet transactions. With more than 9 million online shoppers, organizations cannot afford to delay their ecommerce strategies. Forrester Research anticipates exponential growth in business-to-consumer ecommerce, from about $8 billion in 1998 to $108 billion by 2003.[20]

Percentage of the Population Online				
	1995	**1998**	**2000**	**2005**
North America	8.9%	27.6%	47.9%	71.5%
West Europe	2.2%	8.8%	21.7%	50.1%
East Europe	0.1%	1.0%	3.3%	15.2%

[20] Dain Rauscher Wessels, *eServices – When Every Minute Counts* (Dec. 1999), 16-17.

Percentage of the Population Online				
	1995	**1998**	**2000**	**2005**
Asia-Pacific	0.1%	0.7%	1.7%	4.6%
South/Central America	0.1%	0.5%	2.1%	7.9%
Middle East/Africa	0.0%	0.3%	0.7%	2.4%
Users Worldwide	**0.7%**	**2.5%**	**5.2%**	**11.1%**

Source: Computer Industry Almanac

Percentage of the Population Online			
	1995-1998	**1998-2000**	**2000-2005**
North America	46%	32%	8%
West Europe	59%	58%	18%
East Europe	101%	79%	36%
Asia-Pacific	87%	51%	23%
South/Central America	107%	96%	30%
Middle East/Africa	82%	58%	27%
Users Worldwide	**54**%	**44**%	**16**%

Source: Computer Industry Almanac

Driving Forces

With the megatrends in mind, USbancorp – Piper Jaffray provides an overview of the societal and technological changes. Among the foreseen changes are those that will affect general education in the United States. Already, various states have taken up initiatives to elevate scholastic results.

> e-Learning is an outgrowth of a number of far-reaching societal and technological changes that have been evolving over the last several years. Knowledge is now the raw material that fuels our economy, as the demand for skilled workers reaches all-time highs. Coupled with the increasing demand for skilled workers is the well-documented fact that prosperity is a close cousin of education--America pays a premium to the well-educated. We are seeing a number of key demographic trends come together to increase the demand for education and training. The baby boom echo is spawning the next generation of high school students. Working adults are going back to school in record numbers. ***Many Americans have come to realize that in order to continue to have something to offer the workplace, learning must be a lifelong activity, not just something we did back in school. Political winds are blowing, too, raising education to the forefront as a national priority. Emphasis on accountability in education has made assessment and testing a hot button across the United States.*** Federal and state programs seek to reduce the class size, solve the teacher shortage crisis, attract and retain the best and brightest teachers, and fund programs that enhance the overall educational experience. The changes we are seeing in society are converging at lightning speed with advancements in technology. One of the most

> powerful technological advancements that has hit the scene in recent history is the Internet, which in a few short years has become the bedrock for information, communication, and commerce. The collision of the Internet and America's thirst for knowledge has given birth to a new industry that we call "e-Learning." The e-Learning industry is marked by a host of business models, some of which never before existed, with no one player dominating the competitive landscape.
>
> *Information and knowledge are the thermonuclear competitive weapons of our time. Knowledge is more valuable and more powerful than natural resources, big factories, or fat bankrolls.*
>
> -Tom Stewart, Intellectual Capital[21]

With the understanding that web-based training is a subset of the overall e-Learning market, web-based training is the fastest growing, and soon to be dominant, delivery mechanism for e-Learning. According to the Dain Rauscher Wessels report,

> We expect a shift toward Web-based training. Due to the growing demand for employee training coupled with time and budgetary constraints, managers are looking for a more convenient and efficient alternative to classroom-based instruction. Technology-based training has been a viable alternative to classroom training over the past couple of years. Web-based training is a rapidly growing part of technology-based training. As mentioned, due to the rapid pace of technological change, organizations are faced with the ongoing challenge of retooling their workforce. Many organizations are having difficulty keeping up with IT training demand and are beginning to recognize the advantages of on-demand, Web-based training options.
>
> Several players in the IT training market are pioneering the development of new learning tools that deliver training in a convenient, cost-efficient manner. The emerging delivery mechanism for these learning tools is through the training company's Web site or through the client's corporate intranet. We believe that this type of delivery model has the potential to transform the corporate learning process by bringing an extended platform of coursework to a much larger and geographically dispersed number of students***. The overwhelming economic benefits should accelerate demand for Web-based training over the next several years.*** Within the IT training market, Web-based training is projected to grow from 5% in 1998 to 40% by the year 2003.
>
> …We anticipate a more robust demand environment going forward based on the following factors, among others:
>
> - Advancements in Internet strategies and technologies;
> - Maturation of corporate infrastructures to handle Web-based deployment;
> - Increased acceptance by senior managements of the soundness of Internet-based training;
> - Increased buyer willingness based on a greater understanding of Web-based training-options; and
> - Greater provider understanding of the buyer's requirements.
>
> Based on these factors, the market for e-learning is projected to exceed $7 billion in 2002 compared to $234 million in 1997. This represents an annual compound growth rate of 98% over

[21] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 10.

the five-year period. The forecast represents incremental growth in Web-based training content, services, and tools, as well as ongoing revenue from the shift in technology-based delivery to Web-based delivery. [22]

Need for e-Learning?

WR Hambrecht outlines several needs that are driving the move to e-Learning in the corporate environment. The needs are mostly related to changing technology, lack of necessary skills, competition, demographics, and other changes in the workplace.

> *"Social, technological, and economic drivers are transforming education around the world. As globalization encompasses local economies like never before, the development of a skilled workforce becomes a genuinely international concern. And as human capital becomes the chief source of economic value, education and training become lifelong endeavors for the vast majority of workers."*
>
> *- Peter J. Stokes, Eduventures.com, 1999*

Economy is evolving to a knowledge-based economy

In the last four decades, economic and technological forces have transformed the U.S. economy from a production-based economy to a service-based economy. In the old economy, corporate value and value creation were defined primarily through physical and financial assets. The new economy puts a premium on intellectual capital. However, the life of knowledge and human skills today is shorter than ever, increasing the pressure to remain at the forefront of education and training throughout a career. In the midst of globalization and technological revolution, four-year degrees are just the beginning of a forty-year continuing education. Life-long learning may be considered merely a buzzword today, but it is quickly becoming an imperative.

A paradigm shift in the way education is viewed and delivered

At the beginning of the new millennium, corporations view learning increasingly as a competitive weapon rather than an annoying cost factor. Business success depends more and more on high-quality employee performance, which in turn requires high-quality training. Corporate executives are beginning to understand that enhancing employee skills is key to creating a sustainable competitive advantage. In the quest to remain competitive in today's labor-tight market, companies are exploiting advances in technology to train employees more rapidly, more effectively, and at less expense than in the past.

Huge knowledge gaps demand educational system reform

The new global economy poses more complex challenges to workers, requiring higher levels of education, computer literacy, critical thinking, information analysis, and synthesizing skills. However, educational deficiencies have brought America to the edge of a widening knowledge gap. The U.S. is lagging behind educational levels of other industrial nations in several key indicators. U.S. students, for example, still trail students from other developed countries in mathematics and science achievement, according to the U.S. Department of Education. Even more alarming is that the literacy proficiency of a substantial proportion of the U.S. labor force is limited. More than forty percent of the labor force perform at the two lowest levels on government literacy scales, suggesting that many workers lack the skills needed to interpret, integrate, and compare information using written materials common to the home or workplace. ***The chasm between the higher demands of a knowledge economy and the educational status of the***

[22] Dain Rauscher Wessels, *eServices – When Every Minute Counts* (Dec. 1999), 76-77.

workforce is deep and must be addressed if the U.S. is to remain competitive internationally. A thorough reexamination of curriculum and teaching methods as they relate to labor market preparation is needed. Academic and corporate environments must be redesigned to adequately prepare people to function in an information society.

Globalization of business is resulting in manifold challenges

Advances in information technology and falling trade barriers facilitate business around the globe. As borders become less meaningful, global competition intensifies. International expansion and accelerating M&A activity have led to larger and more complex corporations. Today's businesses have more locations in different time zones and employ larger numbers of workers with diverse cultural backgrounds and educational levels than ever. Thus, more information has to be delivered in increasingly larger organizations, challenging internal planning, logistics, and distribution. Corporations worldwide are now seeking more innovative and efficient ways to deliver training to their geographically dispersed workforce.

Social and demographic changes direct education toward older target groups

Organizations and training providers need to evaluate whom they train and how. Today, traditional students in higher education – age 18 to 22 – make up less than 20% of all students. ***The fastest growing group attending higher education institutions are working, part-time students older than 25.*** This new group of "learning adults" is seeking education principally to advance their careers and increase their salaries. For universities and business-to-consumer (B2C) training providers, these individuals are excellent candidates for education delivered to their homes or offices. Declining birth rates, aging population, and lack of skilled labor also require an objective evaluation of the training needs of older age groups. In the new economy, even senior workers, including those nearing retirement, need to be trained. Broader acceptance of new training delivery options among older workers should facilitate the training process. Americans over 50 years old are already the fastest growing user group of the Internet today.

Learning has become a continual process rather than a distinct event

In the new economy, corporations face major challenges in keeping their workforce current and competent. Many past training practices are unable to meet these challenges. Traditional training is often unrelated to new business initiatives or key technology drivers. In "just-in-case" fashion, courses are given and then forgotten, often without improving the performance of workers. While learning is not a one-time activity, training has traditionally been treated as such. To retain their competitive edge, organizations have started to investigate which training techniques and delivery methods enhance motivation, performance, collaboration, innovation, and a commitment to life-long learning.

Explosive growth of the Internet provides delivery vehicle for education

The emergence of online education is not only a matter of economic and social change, but also of access. IDC estimates that, by 2003, the number of Internet users worldwide will grow to about 502 million, up from 87 million in 1997, representing a CAGR of 34%. With an estimated 103 million users in 2000 – or 40% of the projected 2000 total – the U.S. has the largest share and highest penetration of the Internet. The U.S. is also the leading nation in ecommerce. By 2003, one-fourth of all U.S. business-to-business purchasing will be done online, as predicted by The Boston Consulting Group. The increasing integration of the Web and American culture is also evidenced by tremendous annual user growth. In 1997, only 15% of the U.S. population used the Internet – then mostly a domain of educational institutions and businesses. ***A stunning 63% of Americans will be surfing the Web in 2003, more than doubling the usage in 1999.*** Through its increasing reach and simplicity of use, the Internet has opened the door to a global market where language and geographic barriers for many training products have been erased.[23]

[23] WR Hambrecht + Co, *Corporate e-Learning: Exploring a New Frontier* (2000), 2-5.

Key Trends – The End of Learning As We Know It

WR Hambrecht identifies several trends that will impact learning. Among the trends are branding, changes in strategy for the established training companies, partnering, outsourcing, competition, and changes in other areas related to the development of web-based training materials, such as reusable learning objects.

Branding: Quality Is Key

With new content providers, technology suppliers, and service vendors emerging on a weekly basis, it is becoming more difficult for corporations to decide which training provider to choose. Quality, price, and sophistication of courses and technology vary widely. Today, a corporate training department that wants to purchase an online course on leadership, for example, has no efficient means to compare dozens or even hundreds of leadership courses from different vendors. Low market transparency and limited knowledge of e-learning products will likely represent serious challenges for corporate customers in the next several years. ***We believe companies will increasingly prefer the "safe choice" and retain providers with established brand names. Brand is and will continue to be the most important factor influencing the competitive landscape.*** Corporate buyers will be willing to pay a premium for a quality product to avoid even costlier mistakes. E-learning providers are currently addressing the main factors constituting a brand, such as quality, consistency, competency, reputation, and a loyal and recognized customer base. We believe that the players that successfully create a brand that implies trust with corporate buyers in 2000 and perhaps the first half of 2001 will be the winners in this market.

Traditional Training Companies Adding the "e" to Learning

Heavily classroom-learning focused players, such as Provant, DeVry, New Horizons Worldwide, ExecuTrain, Global Knowledge Network, and SMG, have been adjusting their strategies and moving quickly into the hot technology-based training market to secure a piece of the pie. Companies that do not enter the e-learning business now will become footnotes in the competitive landscape. Traditional content providers are facing the problem of deciding how much of their product line should remain in c-learning and how much should be moved into e-learning, reflecting the change in learning habits of their customers. While only about 20% of corporate training took place electronically in 1999, the number is estimated to rise to 40% by 2003. [8] This development mirrors the dramatic change in revenue sources of major players between 1997 and 1999. Until last year, on-site training accounted for the lion's share of revenues for most traditional c-learning companies. For those who decided to test new waters with both feet, however, revenues from online training have caught up quickly and should rise further.

E-Learning Partnerships Are Increasingly Common

Publishers of content are entering into strategic alliances and partnerships with education technology vendors, training services suppliers, or other content providers to enhance their product offerings, expand their distribution channels, explore new market segments, and capture a larger share of the fast-growing IT and soft skills training markets. Others team up with learning portals or even diversified ecommerce sites, leveraging their distribution capabilities in order to reach a broader audience***. Since partnerships are critical in growing an Internet business, we should see many more of them in the year ahead.*** However, part of the value of a partnership is its exclusivity. Currently all the players appear to be partnering with each other. Partnerships that are easily replicable do not necessarily carry a significant value proposition.

Outsourcing – Slowly but Surely

An increasing number of companies are outsourcing part or all of their training activities to outside consulting firms or training companies in order to reduce their overall education training and administration costs. In 1999, 24% of all corporate training was outsourced, with IT training making up the largest share by far, accounting for 63% of the total. [9] However, with only 5% year-

over-year growth, the trend towards outsourcing training is moving more slowly than expected, most likely because of the lack of quality content in the market. A study conducted by *Training Magazine* in the fall of 1999 even concluded that the trend towards outsourcing does not seem to exist. We view this as only a temporary pause until supply and demand for training content, technology, and services are more balanced. Competitive pressures and cost-cutting should force corporations to continue outsourcing their training activities, leading to the double-digit growth rates we have seen in previous years.

Competition Should Pick Up

We anticipate competition in the corporate e-training market to heat up over the next few years, especially in the IT training industry, where lack of customized and high-quality content is not such an issue. Strong market growth and relatively low barriers to entry are attracting new market entrants in both product segments (soft skills and IT training), including competitors from related business areas such as the consulting industry. As new players appear on the scene and more enterprises outsource their training activities, we expect training suppliers to compete more vigorously for market leadership on the basis of brands. We also think that, in this early-stage market, prices for brand products will be relatively unaffected by the battle for market share and may even increase.

World of Training Is Converging

The trend towards convergence in corporate training can be observed in different areas: 1) Since corporate customers no longer want to employ several different content, services, and technology providers to meet their educational needs, training companies have started to play on all three fronts; 2) Many IT and computer-training vendors are expanding their product lines with management and soft skills training, while soft skills training providers are eyeing the technical arena; 3) A number of major corporations have started to centralize their training operations, which entails shutting down their stand-alone IT training departments and integrating them into their core corporate training groups; and 4) ***Corporate trainers report that e-learning and c-learning are blending rather than one ruling out the other. That is, the strongest use of online learning seems to be an extension of rather than a replacement for classroom learning.***

Development Cycles Will Collapse

Not too long ago, content developers had four to six months to create an average two-hour learning program. Increasing competition and the velocity of the new economy no longer allow e-learning companies to spend six months or even six weeks on the development of a course. In the IT and software industries, for example, R&D cycles have accelerated with staggering speed, and user software has been commoditized. Similar developments can be expected in the e-learning industry. Development cycles are predicted to shorten by 20% every year to two or three weeks by 2004. [11] This imperative will drive more template-based designs and fewer custom graphics. Learning objects will be created in smaller chunks and reusable formats. As a consequence, the industry will become more efficient and competitive.

Technology Making Quantum Leaps and Standards Emerging

Technology infrastructure, especially for bandwidth, varies widely in corporate America. Lack of compatibility between existing learning technologies and current IS infrastructure is one of the main barriers to adopting Web-based training. We are convinced that the move to define open standards is crucial to the continuing successful adoption of e-learning, especially as it begins to transition beyond early adopters into the rapid growth phase of the market. Authoring tools will need to operate across different platforms and communicate with other tools used to build learning systems. Content and courseware must be reusable, interoperable, and easily manageable at many different levels of complexity throughout the online instructional environment. Enterprise learning systems have to accommodate numerous and varied learner requirements, needs, and objectives. Corporate customers need to be able to easily track content created by multiple content providers through one training management system and search vast local or distributed catalogs of content to

identify learning objects or modules on a particular topic. The race for education technology standards is on. Advances in a wide range of technologies supporting diverse education and training tasks are currently being made. Issues such as content interoperability, metadata tagging, and bandwidth are being addressed. But the industry still has some homework to do to create the flexible, adaptive, and integrated learning systems needed to push e-learning into the mainstream.

Market Share of Live Web-based Course Delivery Expected to Surge

Less than a third of all Internet-based training purchases currently include synchronous course delivery. ***As new technological standards and increasingly robust and interactive e-learning solutions emerge, we expect to see the arena of live online collaboration move forward dramatically.*** One reason is people's desire to interact while learning. Students want to sense the online presence of their teachers and peers and to communicate with them in real-time. Once such technology is widely available and increasingly user-friendly, corporations are likely to make increasing use of virtual classrooms for employee training. Another likely reason for adoption is the cost efficiency and convenience provided by synchronous content delivery. Real-time collaboration technology offers many deployment opportunities beyond employee training. Traditional in-person meetings, such as executive briefings, new product roll-outs, client presentations, and sales force briefings, can be held online without loss of auditory/visual inputs and 360-degree interaction. We expect companies that offer easy-to-use online collaboration technology and integrate voice communication, content and application sharing, conferencing, instant messaging, and other collaboration tools supporting real-time interaction to enjoy strong growth in the next few years.

Stronger Demand for "Surrounds" of Instructor-Led Classes Should Spur Growth

One of the hottest growth areas in online learning is the creation of Internet/intranet meeting places ("surrounds") for instructor-led classes to provide community, communication, and supplemental materials online. An increasing number of educational institutions and corporations are utilizing online authoring and delivery systems to build surrounds supporting the learning process. This new learning model facilitates studying, note taking, class discussions, and "catching up," all of which enhance classroom instruction. Surrounds also help to overcome anxiety and reservations, especially among older age groups, and build learner acceptance and familiarity with online learning. In our view, this step-by-step solution should make more learners willing to take pure Web-delivered classes, contributing to the rapid growth of the industry.[24]

Next Generation of Workers

Not only is it important to understand the changes in the demographics, we must also understand the expectations of the next generation of workers. Within five to ten years, the generation entering the workforce will have spent most of their youth in the Internet era. What will their expectations be as to learning? How will they find the answers to the challenges they face?

K-12 – Kids and Teens

USbancorp – Piper Jaffray describes the increase numbers of kids and teens using the Internet.

> And it is not just adults. Today's kids and teens view the Internet as a preferred tool for information gathering. The two largest growth sectors on the Internet, kids (ages 5-12) and teens (ages 13-18) are expected to grow dramatically over the next few years. The number of kids on the Web is expected to grow to 21.9 million in 2002 from 8.6 million in 1998, a CAGR of roughly 26%. The number of teens on the Web is also expected to grow rapidly to 16.6 million in 2002 from 8.4 million in 1998, a CAGR of approximately 19%. Moreover, by 2002, Jupiter

[24] WR Hambrecht + Co, *Corporate e-Learning: Exploring a New Frontier* (2000), 10.

Communications predicts that teens will account for $1.2 billion and kids will account for $100 million of the e-Commerce dollars spent.[25]

Kids and Teens on the Internet			
	1998	**2002**	**Percent Increase**
Kids	8.6 million	21.9 million	155%
Teens	8.4 million	16.6 million	97%

Note: Kids are ages 5-12; teens are ages 13-18

Source: Jupiter Communications

The following graph indicates the locations from which children are accessing the Internet[26].

Kids on the Web (millions)								
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
Children who use from home only	1.5	2.6	3.8	5.2	6.7	7.3	9.5	10.1
Children who use from home and school	0.6	1.4	2.9	4.2	5.8	7.1	7.8	10.1
Children who use from school only	--	0.1	0.3	1.0	2.5	4.7	7.8	10.1
Total online children (2-17)	2.1	4.1	7.0	10.5	14.9	19.2	25.0	30.3

Source: Jupiter Communications, The 1997 Online Kids Report

Higher Education

The following snapshot of higher education by USbancorp – Piper Jaffray shows the type of changes expected in the post-secondary market:

> The U.S. higher education market consists of 3,700 educational institutions and accounts for $225 billion in expenditures.
>
> - Enrollment in institutions of higher education was over 14 million students in the 1996-1997 school year, and is expected to increase to 16 million by 2008.
> - There are 6.6 million adults (persons aged 25 and older) projected to enroll in higher education by 2007.
> - The number of high school graduates is expected to increase 20% from 1995 to 2008 (from 2.5 million to 3.0 million).
> - Sixty-five percent of all high school graduates go on to college.

[25] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 24.
[26] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 39.

- The number of students enrolled in distance education is expected to grow from 753,640 in 1998 to 2.2 million by 2002. (Source: NCES, IDC)

- By 2003, over 50% of all higher educational institutions globally will be offering e-Learning programs to students. (Source: Gartner Group)[27]

Almost every college student has access to the Internet, according to IDC:

> Computer usage in colleges and universities is almost a requirement at this point. Some universities require students to have a PC upon enrollment. According to the IDC:
>
> - 92.3% of four- and two-year college students use a PC at school.
>
> - 86.6% of students at four-year colleges and 56.6% of students at two-year colleges use the Internet.[28]

USbancorp – Piper Jaffray refers to several different sources that discuss the integration of the Internet in the lives and pocketbooks of college students.

> It is more than just learning online though. The Internet has become a daily staple for many college students today. Over 60% of college students check out the Web daily and almost 85% own computers. (Source: USA Today) ***Also, of the $105 billion university students are expected to spend on everything from books to clothes to rent, $700 million will be spent online.*** *(Source: Student Monitor)* ***Moreover, college student spending over the Web is expected to reach $4 billion by 2002.*** (Source: Jupiter Communications) No doubt, the Web is wired into the daily lives of college students, creating huge opportunities for companies that offer products and services to students online.[29]

Other Notable Education Drivers for e-Learning

USbancorp – Piper Jaffray denotes several other drivers for change that lead to e-Learning. The following points cover drivers from parents to K-12 students to college students:

- e-Learning is now broadly recognized as a viable learning vehicle in higher education. This recognition is furthered by the scores of renowned educational institutions that now offer e-Learning programs, such as Wharton, Harvard, Stanford, and UCLA.

- Today's high school graduates are more technology savvy than at any other time in history. Often referred to as the "Net" generation, these graduates grew up with PCs and the Internet and thus are more technology savvy than their counterparts of the past. Approximately 31% of high school students rated "expert" or "highly proficient" in their computing or technical skills. (Source: Student Monitor LLC) The growing number of technology savvy high school graduates will clearly be a boon to higher education c-Learning. Today's college students grew up with the Web and are comfortable extending its usage into their college education.

[27] Ibid., 47.
[28] Banc of America Securities, *The e-Bang Theory* (Sept. 1999), 7.
[29] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 54.

- Parents and students are looking for lower cost educational solutions. In an effort to meet the demands of their communities, educational institutions feel it is necessary to offer low-cost education. Public institutions, for example, which generally have a more community-oriented focus than their private counterparts, offer a greater number of e-Learning courses.

- Lifelong learning is as germane to the American culture as baseball and apple pie. Americans have realized that competitiveness in the job market and continual learning are strongly correlated. The Internet represents the underlying bedrock that makes life-long learning a reachable goal for all.

- Less than 33% of college students are categorized as "traditional" full-time students.

- e-Learning tears down the classroom walls. With the addition of more students, higher education institutions face capacity issues as the need for more classroom space increases.

- Educational institutions look to e-Learning as a way to leverage their investment in IT technology, thus making IT infrastructure expenditures less of an overhead item and more of a direct cost of doing the business of education. e-Learning can be viewed as a natural by-product of higher education's investment in IT infrastructure.

- The United States government has recently demonstrated a greater commitment to e-Learning. Examples include the DOE's $30 million competitive grant program to support e-Learning and its Learning Anytime Anywhere Partnership Program, which encourages educational institutions and businesses to offer learning solutions to those constrained by time and place.

- e-Learning enables colleges to extend their reach to learners who would otherwise not have the time or opportunity to attend college.[30]

Corporate Workforce Pressures

WR Hambrecht identifies several driving factors that, from the corporate standpoint, are at the forefront of the e-Learning movement:

Technological changes increase complexity and velocity of work environment

Technology has changed the way we live, work, think, and learn. Today's workforce has to process more information in a shorter amount of time. New products and services are emerging with accelerating speed. As production cycles and life spans of products continue to shorten, information and training quickly become obsolete. Training managers feel the urgency to deliver knowledge and skills more rapidly and efficiently whenever and wherever needed. In the age of just-in-time production, just-in-time training becomes a critical element to organizational success.

Lack of skilled labor drives need for learning

With unemployment rates at historic lows and a widening skills gap among the workforce, corporations compete fiercely for skilled workers. According to PriceWaterhouseCoopers, 70% of Fortune 1000 companies cite lack of trained employees as their number-one barrier to sustaining growth. Business managers realize that corporations that offer ongoing education and training enjoy a higher rate of employee retention and the benefits of a better-skilled workforce. As a result

[30] Ibid., 55-56.

of the rising importance of training, an increasing number of corporations have hired Chief Knowledge Officers (CKOs) or Chief Learning Officers (CLOs) to plan and coordinate training programs.

Fierce competition in most industries leads to increasing cost pressures

With traditional training methods, companies generally spend more money on transporting and housing trainees than on actual training programs. ***Approximately two-thirds of training costs are allotted to travel expenses, which represents a major drain on bottom-line profitability.*** In today's competitive environment, organizations can no longer afford to inflate training budgets with extensive travel and lodging. If opportunity cost is taken into account, the actual costs of training are even higher. Time spent away from the job traveling or sitting in a classroom reduces per-employee productivity and revenue tremendously.

Knowledge workers require greater flexibility in the workplace

Globalization, competition, and labor shortages cause employees to work longer, harder, and travel more than previous generations did. At the same time, these workers require more independence and responsibility in their jobs and dislike close supervision. Today's knowledge workers have a non-traditional orientation to time and space, believing that as long as the job gets done on time, it is not important where or when it gets done. By the same token, they want the opportunity to allocate time for learning as needed. Modern training methods need to reflect these changes in lifestyle.[31]

The biggest issues have to do with hiring qualified employees and improving and maintaining knowledge workers' skills. According to SunTrust and IDC, these human resource issues are on every CEO's or employer's mind:

> The IT workforce shortage is a key factor in the increased need for corporate training. The current shortage is due to the rapid rate at which computer-based technologies for commerce and business applications has grown, and is also due to the insufficient development of workers with technical understanding. In the United States alone, there is a current shortage of 722,000 IT workers. IDC forecasts this number is expected to reach 847,000 by 2000. As a result, an increasing amount of corporate training is associated with IT skills. In 1999, *TRAINING magazine* stated that 33% of employer-sponsored training pertained to IT skills. Further, IT training is expanding, having increased from 25% in 1993.
>
> In the U.S., the issue of skills development and continuous learning for IT workers is always the first or second most important concern of employers and employees alike (IDC). Because of the rapid rate of new technology adoption and the economic growth over the last decade, staying competent has become one of the most important issues of the IT workforce.[32]

USbancorp – Piper Jaffray addresses the skills gap with a comparison of skills that are needed and the training that is currently available:[33]

Percentage of Companies Recognizing Need for Skills Versus Training Offered by Training Category			
Skills Gap	**Need for Enhancement**	**Training Offered**	**Gap**

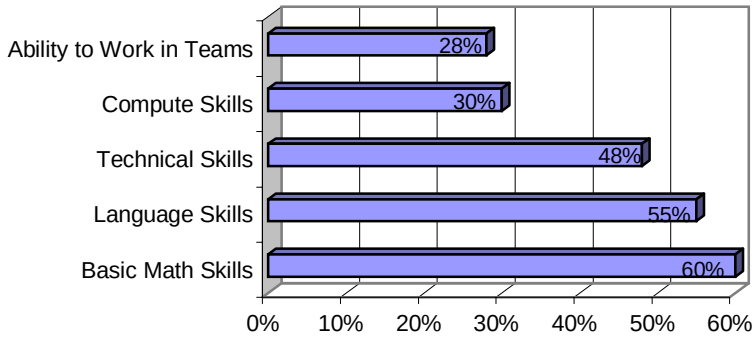
[31] WR Hambrecht + Co, *Corporate e-Learning: Exploring a New Frontier* (2000), 3-5.
[32] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 51.
[33] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 73.

Basic Computer	82%	75%	7%
Written Communication	78%	35%	43%
Interpersonal Communication	77%	64%	13%
Organizational	71%	72%	-1%
Customer Service	69%	60%	9%
Quality Awareness	62%	55%	7%
Cross-Cultural Communication	61%	22%	39%
Sales/Marketing	51%	43%	8%
Basic Math	46%	14%	32%
Reading Comprehension	45%	10%	35%

Source: Adapted from Olsten Corporation, Skills for Success, The ASTD Training Data Book, and USbancorp Piper Jaffray

Merrill Lynch also identifies the corporate needs for a more highly skilled workforce and the trend in Internet-based training as the outcome[34].

Skill Deficiencies In Workforce



Source: Forbes Magazine, July

Technical Industry Forces – The Giants (AOL, AT&T, IBM, Microsoft …)

It happens in every market--larger companies seize opportunities and have the resources to dominate. The giants in the technology industries will make a strong play to gain mind share and market share in e-Learning. This is already evident with the recent announcement of the LRN

[34] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 137.

(XML) proposed standard from Microsoft and Mindspan Solutions from IBM/Lotus. Others are expected to create similar initiatives related to their particular areas of technology.

History teaches us that large, deep-pocketed companies can make a significant impact on a market in a relatively short amount of time. We believe e-learning is ripe for a similar play by the Giants. The incentives are obvious:

- An enormous market with annual expenditures potentially reaching trillions.
- An inefficient and fragmented market.
- The likelihood that technology will improve efficiency and consolidate the market.
- Exciting opportunities to create lifetime brands for young consumers.

Companies such as IBM/Lotus, Sun, Microsoft, Harcourt and others have the mettle to dominate the e-learning world. One of their core competencies is their ability to develop new technologies and adapt them to different marketplaces, then use their substantial marketing power to quickly dominate the market. The Giants usually possess the key ingredients to dominate a new market:

- A recognized brand.
- The financial resources to lose money until critical mass or significant market share is captured, particularly by supporting a massive marketing budget.
- Superior reputations for quality, service and innovation.
- A large installed base of users.

Where Will the Giants Frolic?

We thought it would be instructive to provide a brief look at some of the giants' current e-learning initiatives. We believe the technology giants will focus on systems support and infrastructure for e-learning. We believe they will flex their muscles by developing, marketing, installing and maintaining systems that bring learners together including:

- Collaboration software and hardware.
- Search technologies.
- Networks and bandwidth enhancement.
- Oodles of content.

The Portal Giants

The decline in computer prices has enabled millions of Americans to go online. According to the IDC, in 1998, 44.5% of all households owned at least one PC. Of those homes with PCs, 55.3% of them were connected to the Internet. We believe as consumer access to the Internet expands, major Internet portals could become strong players in e-learning.

Education is the second-most-popular application for family households, which shows the potential for the Internet to be used in the area of education. In our view, AOL and Yahoo! have the brand names (and thus the site traffic), financial resources, marketing prowess and sales organization to draw both consumers and vendors to their sites, thereby becoming leading e-learning portals.

America Online (AOL)

We believe AOL may be a prominent player in the e-learning world, primarily driven by its huge membership base (now upwards of 17 million people). AOL offers consumers access to learning content, support services, chat rooms and more through its Research and Learn web center. In AOL's Research and Learn web center there are links to a variety of education topics such as science, history, legal, reading and literature, as well as links to top education sites such as Family Education Network, the college boards, Learn2.com and more.

Content could be developed in house, privately labeled for AOL (and thus branded AOL education) or resold by AOL for content developers and authors. In any scenario, AOL would derive revenues from product sales and increased advertising as learners would spend time on the AOL Research and Learn site doing research, taking classes, preparing for tests and completing assignments.

Yahoo! (YHOO)

Yahoo!'s education center provides a link to a wide variety of education-related topics such as instructional technology, K-12, distance learning and standards and testing. Each category is further broken down by market or topic, providing links to vendors in the specific subject area. Yahoo!'s home page includes an education "center" and a separate web guide for children called Yahooligans! Yahooligans! is a search engine specifically for kids. The site provides links to a plethora of online learning resources and other sites that are appealing to children. Some of the links include:

- Teachers Guide to teaching with Yahooligans!, which provides resources to help teachers use the Internet and Yahooligans! in their classrooms.

- School Bell links to resources that are specifically school related. Links to sites that help with homework, various subjects, reference and information on clubs, programs and careers.

As with AOL above, we believe Yahoo! could be a prominent player in e-learning, but most likely as a content aggregator e-learning portal. We do not believe teaching or advising students or teachers will be a long-term core competency for the company, but given its brand name and tremendous site traffic, Yahoo's future in e-learning may be something to yell about.

Microsoft (MSFT)

In 1995-1996, industry observers pilloried Microsoft for their lack of an Internet strategy. Upstart Netscape rolled out their Navigator web browser and dominated the consumer and corporate markets. Microsoft did not panic. Nor should it have, because it had the resources and economic

clout to strike back. When it seemed appropriate in their eyes, Bill Gates and Microsoft shifted energy and resources toward the Internet.

The Microsoft barrage included:

- An Internet browser (Microsoft Internet Explorer).
- An online provider (Microsoft Network-MSN).
- A partnership with media/content/broadcasting giant NBC (MSNBC).
- E-commerce sites (Expedia, carpoint, etc.).
- Investments in cable (TCI), broadband and content.
- Microsoft remains the dominant PC-centric software provider, yet now it is an online force, too.

Of course, Microsoft's strategy was aided by its own brand name and its appeal to Microsoft partners (see MSN and MSNBC). In short, we view Microsoft's online move as a classic in the Land of the Giants: Use might to get into an attractive market when it is believed that the dust is settling, then use vast marketing clout to ensure the effort receives support from key players in the technology, media/content and consumer worlds.

We are confident that Microsoft will soon release a robust enterprise-level management product to manage the learning module of the enterprise. The company already owns other assets that are germane to e-learning, including:

- **NetMeeting**, a collaboration and conferencing tool that allows users to interact across the Internet in real time. Products include video and audio conferencing capabilities, chat, whiteboard and file transfer to facilitate document sharing.
- **Microsoft BackOffice**, a suite of products designed to help network administrators manage a single server or a distributed network of multiple servers.
- **Internet Explorer**, a web browser that allows users to access the Internet, allows developers to construct high-quality content and allows administrators to roll out multiple access point with minimal administration.
- **Microsoft WebTV**, an e-appliance that allows users to access the Internet through their television. Users can send and receive e-mail, access interactive television programs or just surf the Net.

AT&T (T)

AT&T, historically a voice and data transmission company, looked into the crystal ball and saw the singular convergence of voice, data, entertainment content, billing and services at the back of the consumer's cable-connected television. AT&T also saw something else in that crystal ball--a weaker AT&T. So, Giant AT&T responded. It recently became one of the largest cable TV players virtually overnight with the purchase of TCI Inc. and the pending buyout of MediaOne Group.

AT&T's strategy was extremely bold, one that few participants in the telecommunications or cable industries could even have considered. Nonetheless, given AT&T's financial position, installed customer base and brand name, the combination looks like a winner. Successful execution still looms as a significant question mark, but the probability is high that AT&T will dominate or at least wield significant influence in the new telecom world.

IBM (IBM)

We believe IBM will walk among the giants as the e-learning universe takes shape, driven by its experience with its external training division (Catapult, focused on software training), its internal education efforts (Global Learning) and Lotus LearningSpace (a dominant platform for collaborative learning). Global Learning was launched in 1997 and now trains more than 125,000 employees across the globe. Catapult boasts more than $300 million in revenue, and Lotus LearningSpace (purchased in 1995) has leveraged the installed based of Fortune 1000 Lotus Notes users to become a widely used platform for collaborative learning.

IBM has taken long strides in a short time, something we expect from a giant with long legs. We expect Big Blue to emerge as a dominant force in the e-learning world, primarily as a platform provider, for the following reasons:

- IBM has one of the best brand names in the world.
- It has very deep pockets to support necessary acquisitions and other investments.
- Its distribution channel (sales force and resellers) is broad and deep.

The ability to leverage the installed user base of Lotus Notes through a global sales force and a marketing budget virtually unmatched in the e-learning universe makes IBM an obvious candidate for giant status. In the fall of 1999, Lotus acquired the training management software of Macromedia, Pathware to enhance LearningSpace's ability to track and schedule c-learning courses and monitor learner progress. We believe the transaction supports our thesis regarding the migration toward the need for providers to offer customers a training solution rather than a specific product or service capability. While the marriage will require some near-term work (Lotus is still integrating 1998's acquisition of Databeam), it should provide Lotus with a more complete, integrated training solution in the long term.

We believe IBM will provide content or give clients the ability to create content in support of the LearningSpace learning platform focus. Catapult certainly could be a source of that content, although we believe that will not be the focus in the near term.

Sun Microsystems (SUNW)

Sun Microsystems is leading an initiative called the Schooltone Alliance. . . . Sun hopes to further its penetration of the K-12 e-learning market by combining Sun's assets (reputation, installed base, marketing budget, sales force) with a wide variety of products, content and services for the K-12 market. The initiative should drive Sun's core business, too, as the Alliance should drive sales of Sun's servers and technology service businesses, in our opinion.

Oracle (ORCL)

Oracle Education Online is the complete one-stop shop where IT professionals can register for classroom training, purchase interactive courseware, learn online, interact with others about Oracle technology and prepare to become Oracle Certified Professionals. Importantly, content on the Oracle education site is not limited to Oracle software. Oracle also offers training in Microsoft,

Novell and other Internet-related technologies. Oracle Education is roughly a $400-million-per-year business.

Harcourt (H)

Harcourt is the ideal example of a publisher that can be a giant in e-learning, primarily driven by its cache of content:

- Harcourt Schools: K-8 textbooks.
- Holt, Rinehart & Winston: upper school textbooks.
- Steck-Vaughn: K-12, Adult Education and ESL supplemental products.
- Harcourt College: textbooks.
- Harcourt Trade: Fiction, nonfiction adult and children's books.
- The Psychological Group: develops and administers K-12 clinical and assessment tests.
- NETg: Online training content and services.
- International Correspondence School: Degree and nondegree distance learning provider.
- Professional Trade: materials for finance, accounting and legal professions.
- Drake Beam Morin: career and outplacement services.
- Domestic STM: science, technology and medical publications.

Beyond the company's current business lines, however, are three major initiatives that should propel Harcourt into the mainstream of e-learning:

- **Through Harcourt University**, Harcourt may become the first major publishing house to offer accredited college degrees, pending approval from the New England Association of Schools and Colleges.
- **An Internet high school** is in the works for students planning to take high school equivalency exams. We believe Harcourt is well positioned to build a profitable business in high school e-learning. The Harcourt name is well-recognized and respected within high school academic circles. The company is experienced in developing and delivering K-12 tests, and it should have an early-mover advantage in the e-learning world.
- Harcourt made a large investment in **Family Education Network**. . . and provides content for its site.[36]

[36] Banc of America Securities, *The e-Bang Theory* (Sept. 1999), 101-109.

Continued Effort to Reduce Costs and Improve ROI

Another key driver, and one that is especially important to businesses of all sizes, is the return on investment. Technologies within e-Learning are beginning to measure the impact that learning has within an organization.

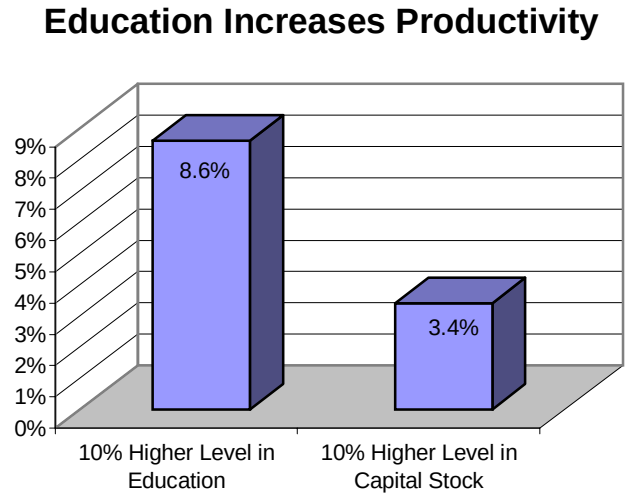
Fred McCrea, R. Keith Gay, and Rusty Bacon from Thomas Weisel Partners have compiled considerable information about e-Learning, how it can be used in targeting business objectives and how to realize a significant return on investment.

> ***Reducing Delivery Costs and Increasing Organizational Efficiency.*** As the reach of global corporations continues to expand, learning organizations must cope with delivering learning to employees who are scattered around the world. At Ford, for instance, 120,000 employees visited the Fairlane Training Center in Dearborn, MI during 1998. With training hours doubling every three years, Ford can no longer justify the expense of bringing people to one centralized location and keeping them from their job functions for extended periods. Instead, new solutions must be found to deliver the learning experience remotely.
>
> ***Validating Outcomes Directly with Increased ROI.*** More and more, corporate universities are no longer viewed as cost centers but instead are given profit and loss status within the company. As a result, managers need as many tools as possible to aggressively sell learning across the extended enterprise. One of the key focuses is demonstrating the direct benefits of learning implementations. University managers need measurable performance data from each engagement or investment in order to show a meaningful return on investment. Therefore, we believe the most successful e-Learning solutions will provide reports that demonstrably prove the link between learning investments and improved business outcomes.[37]
>
> *"Of all the initiatives we've undertaken at Chevron during the 1990s, few have been more important or as rewarding as our efforts to build a learning organization by sharing and managing knowledge throughout our company. In fact, I believe this priority was one of the keys to reducing our operating costs by more than $2 billion per year, from about $9.4 billion to $7.4 billion, over the last seven years."*
>
> – Kenneth T. Derr, Former Chairman and CEO, Chevron Corp.[38]

Changing Perception of Training from a Cost to an Investment

Education and training are beginning to be viewed as an enhancement for productivity, as indicated in the following chart:

[37] Thomas Weisel Partners, *Riding the Big Waves – B2B e-Learning* (Jan. 2000), 13.
[38] Thomas Weisel Partners, *Riding the Big Waves – B2B e-Learning* (Jan. 2000), 9.



Source: The National Center for Educational Quality of the

The perception of training is changing from one of "cost center" to one of "revenue-generating investment." The shift in perception is fueled by the emergence of solid conclusive evidence correlating training with productivity improvements. Motorola, for example, calculates that every $1 it spends on training translates to $30 in productivity gains within three years.

A recent study found that corporations that employed a workforce with a 10% higher-than-average educational attainment level enjoyed 8.6% higher-than-average productivity. In contrast, capital investments that were 10% higher than the average capital investment only yielded a 3.4% higher payoff than average. This illustrates the clear shift our economy has made to favor human capital over physical capital.[39]

Thomas Weisel Partners also points out the power that e-Learning can have in expediting the business cycle of releasing and selling a product. This could be true for any size business. The greatest factor is how distributed the workforce is and the timing by which training must occur, as indicated in the following case study[40]:

A company launches a new product and, in the process, must train its 100-person sales team in the merits and other details of the product. ETA is used to reduce the time it takes to train the sales staff. This reduced time is materially valuable and is equivalent to the value of ETA. This scenario shows the value of reducing the training time it takes to get a sales force 100% capable of selling a new product.

Business Objective	Reduce product-launch training times by one-third to allow sales personnel to hit the streets sooner.
Performance Objectives	Number of days it takes to get 100% of sales force fully trained on new product. Traditional training: 90 days

[39] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 135.
[40] Thomas Weisel Partners, *Riding the Big Waves – B2B e-Learning* (Jan. 2000), 14.

	Enterprise Training Automation: 60 days
Revenue/ Profit Metrics	Number of sales personnel: 100 Average sales volume per day per salesperson: $5,000 Life span of new product: One year or 200 selling days
Value of Business Objective	Number of salesperson days saved using ETA: lOOx3O=3,000 Multiplied by Average sales volume per sales person day: $5,000 Equals Value of reducing product launch times by 33%--$15 million

The product's expected life span is only one year, or the equivalent of 200 days of selling. If the sales force consists of 100 people, then there are a total of 20,000 salesperson days available during the life of the product to sell it.

Using traditional training media, 9,000 sales person days (90 days x 100 sales persons) would be devoted to training on the product, leaving only 11,000 salesperson days left in the product's life to sell the product. Using ETA, training requires only 6,000 salesperson days, leaving 14,000 salesperson days left to sell the product. **The 3,000 extra days resulting from an ETA approach potentially delivers $15 million in sales revenues = (3,000 salesperson days x $5,000 per salesperson).**

If the total investment in the sales force product launch was $500,000, then the first year's return on investment would be:

Return on investment =
(Value of Realized Gain/Investment Required for Gain) m($15,000,000/$500,000)
=3000%

Source: Granada Research

PART II

HOW BIG IS THE E-LEARNING MARKET?

HOW BIG IS THE MARKET?

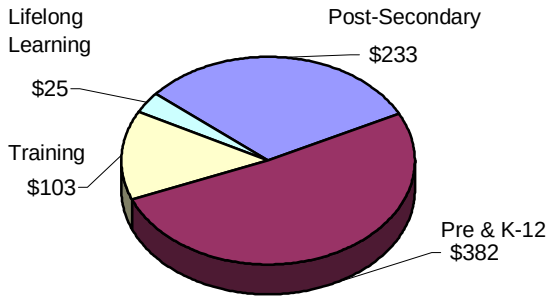
Several learning markets exist. This section breaks down the numbers associated with these markets and identifies the money as either "for profit" or "not for profit." This section also presents several figures and trends associated with the individual learning markets, such as home schooling, K-12, and corporate.

World-Wide Education Market

According to a report from Merrill Lynch, of the $2 trillion spent on global education, $740 billion are spent in the U.S. In the same report, Merrill Lynch explores some of the trends affecting education and corporate training in the United States.

> The two trillion dollar global education and training industry is going through radical changes. Market forces are providing a catalyst to alter the traditional ways education is delivered. Megatrends such as demographics, the Internet, globalization, branding, consolidation, and outsourcing all play major roles in this transformation. In the U.S., the focus of this report, education and training is a $740 billion dollar market.

U.S. Education & Knowledge
Projected Market Size ($Bil)



Source: SunTrust Equitable

Technology and specifically the Internet will "democratize" education, providing greater access at lower cost. Ubiquitous PCs combined with high-speed bandwidth will facilitate engaging anytime, anywhere learning. We predict that "educational portals" (provide a) gateway to the Internet, the world's greatest library, will emerge in K-12, post-secondary and corporate training markets.

In the knowledge economy, the pay gap between those who have a college education and those who don't has widened from 50% in 1980 to an estimated 111% today. A thirty-year-old male with a high school diploma earns just two-thirds what he earned twenty-five years ago. Yet only 21% of American adults over the age 25 have a bachelor's degree or better. These factors continue to propel the post-secondary education market forward.

Corporate training has become a business imperative, migrating from an expense to an investment. Eleven percent or 55 of the Fortune 500 have a Chief Knowledge Officer today, up from virtually none five years ago. ***Motorola calculates that every $1 it spends on training translates to $30 in productivity gains within three years.*** We see the opportunity for the creation

of several multi-billion dollar companies in this highly fragmented market where the largest training company today has training revenues of just $200 million.

The $360 billion K-12 segment is the largest in the education industry, but is the most difficult to invest in. Impediments to change include the entrenched status quo that argues for more time and more money to improve the current dismal situation. Studies showing U.S. students finishing at the bottom in international education comparisons have united parents, politicians and businesses in saying that 200 years is enough, and change and competition are happening. Charter schools, which didn't exist six years ago, now total more than 1,200. There are well over one million children in home school. It is our prediction that 10% of the publicly funded K-12 school market will be privately managed ten years from now, implying a market of over $30 billion in today's dollars.

The ratio of students per PC in public schools has improved from 17 to one in 1993 to seven to one today. Still, when compared to the 50% of capital expenditures that corporations spent on information technology (IT), the 2% of total spending schools commit to technology is relatively small. Computer literacy is the second language of the new economy. This, plus increased accountability and assessment in schools will accelerate the need for Learning Information Systems and other technology solutions to improve education. With two million new teachers to be hired in the next ten years, teacher training will be an important aspect of ensuring that technology is implemented in our schools.

Changing demographics have created huge opportunities in the $34 billion child care industry where the largest 50 companies hold less than 5% of the overall market. Eighty percent of families in America are now either dual income or single parent. Sixty percent of mothers with children under six work outside the home compared to 19% in 1960. A major trend to watch in this market is accreditation. In addition, we predict that child care will become a standard corporate benefit over the next 10--15 years, similar to the way corporations provide health care coverage.

Investment Opportunities

The compelling dynamics of the education industry have not been lost on investors. The sector has attracted significant interest from leading financiers, venture capitalists and visionary business leaders. Since 1994, 38 IPOs and 30 follow-on offerings have been completed, raising $3.4 billion of equity. ***Education is nearly 10% of GDP, yet just 0.2% of U.S. capital markets. We see this, coupled with strong industry fundamentals, causing demand imbalances for education shares to persist for the foreseeable future. In our view, this will result in sustainable high P/E ratios in the sector and significant opportunity for investors.***[1]

The overall education and training market can be segmented into for-profit and non-profit markets. The for-profit education markets are indicated in the following information from Merrill Lynch:

Education Market	For-Profit Market ($Bil)		Total Market ($Bil)	
	Market Size ($B)	Growth	Market Size ($B)	Growth

[1] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 2-3.

Education Market	For-Profit Market ($Bil)		Total Market ($Bil)	
Early Education and Child Care	$11.5	10%	$34	6%
K-12 Education	18.5	15%	358	6%
Post-secondary Education	8	15%	237	6%
Corporate & Government Training	19	13%	98	6%
Consumer Products and Services	13	10%	13	10%
Total	**70**	**13%**	**740**	**6%**

Source: National Center for Education Statistics, Industry Associations Market Research Firms, and Merrill Lynch estimates

> ***While the U.S. spends more money on education than any country on an absolute basis and is second on a percentage-of-GDP basis, our return on this enormous educational investment is unacceptable. US school children, for example, score at or near the bottom in international academic comparisons. Approximately 75% of the $740 billion education market is publicly funded and controlled by a bureaucratic monopoly that are like most monopolies, has stopped serving its customers, operates in the interest of the bureaucrats and employees and is managed much less efficiently than its private sector counterparts. In fact, on average only 50% of public school funds go to classroom instruction and only 3% is spent on books and materials. To the best of our knowledge, there is not another service industry that exists in the world today where 50% of every dollar is spent outside of where the service is being rendered - unless the service is subsidized by the government.***
>
> The disconnect between our current education system and its customers' (students') needs has created tremendous opportunities for for-profit companies that have innovative, customer service oriented education solutions to gain market share. Currently we estimate that the for-profit education market is approximately $70 billion in size, representing approximately 10% of the total education industry.[2]

Consumer/Home Education Products and Services

SunTrust Equitable points out that educational institutions have made significant efforts to get connected to the Internet; however, SunTrust believes that the proliferation of computers in the homes is what will change education as we know it:

> Today, more than 50% of households with children own personal computers. This number continues to rise with the advent of lower-priced PCs and the availability of trade-ins. Increased affordability has expanded the PC customer base to include the full spectrum of household incomes. Because of the proliferation of cheaper PCs, Internet access in America has grown at impressive rates. There are now 36 million homes connected to the Internet and this number is expected to grow to 61 million by 2002 (IDC).
>
> ***Although school connectivity represents a critical first step to incorporating technology in the classroom, ultimately home connectivity will be the deciding factor in the use of the Internet for education.*** As previously mentioned, by 2003 close to 60% of the U.S. population will be online, up from around 42% today. Currently, over five million students are online. This number is expected to grow to 21 million students by 2002. Student interest is stimulated by their experiences in the classroom. The real power of technology will not be completely realized in

[2] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 22.

education unless learning continues at home and parents get involved. Home connectivity is key. It is important to note that the number one reason for individuals with children to buy computers is education.[3]

Consumer/Home Market Snapshot

USbancorp – Piper Jaffray highlights the consumer/home market:

- Parents are expected to spend roughly $23 billion in 2000 on educational toys, books, games, software and services.
- In 1990 22.0 million U.S. households had PCs and 1.0 million were online. In 1998, those numbers increased to 46.0 million households with PCs and 24.0 million online. Further, in 1995, the Internet had 9.0 million registered users. During the month of October 1998, the top 25 most visited sites on the Web had 62.5 million users.
- Number of U.S households joining the Internet per hour: 760.
- Close to 20% of U.S. households are already buying products and services online and more consumers are converting to digital shopping each day.
- According to the National Home Education Research Institute (NHERI), home-schooled students increased from 400,000 in 1990-91 to 1.23 million in 1996-97 and an estimated 1.7 million students were home schooled in 1997-98. (Source: The Education Industry Report)[4]

Merrill Lynch discusses indicators that suggest the consumer/home market is poised for growth:

- Parents dismayed at their children's progress in school, as well as those looking to give their kids a competitive edge, are taking greater responsibility for their education, purchasing services such as tutoring, test preparation courses, private schooling or even schooling them at home. Product purchases include educational software, toys and games, and books.
- Many parents are lobbying for school choice, vouchers and charter schools. Charter schools, of course, have grown from zero six years ago to over 1,200 today. At the extreme edge of this phenomenon are parents who educate their children at home, entirely bypassing the public education system. The number of students in home school today is estimated to be as high as 1.2 million. Another 5 million children attend private schools. Even more parents are taking small steps--supplementing their children's in-class time with separate tutoring sessions or with additional books, educational games and toys and computers and software.
- The tutoring market is an approximately $2.5 billion market, appealing to time-strapped parents whose children are struggling to learn in overcrowded classrooms with thirty kids per teacher or are gifted, and bored in school. This includes private academic test "prep" services to prepare for high-stakes college entrance exams. We further estimate that language instruction is a $1.0 billion industry, and that test delivery is a $1.5 billion market (including test delivery for IT and professional adults).

[3] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 43.
[4] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 88.

- We estimate that education's share of the consumer software market is $700 million, with personal productivity and reference software rounding out the group to create a $1.5 billion market. Parents purchase $2.5 billion of supplemental material each year to help give their children an edge in school. Educational toys are a $1 billion market, and children and adult self-improvement books are a $3 billion market.

- Adults are also accessing education markets in record numbers, be it to improve their English skills, prepare or take a professional certification exam, or purchase self-help books or software.

Schools that teach to the lowest common denominator, the ever increasing importance of education in our society, competition for admission to our top universities, and the potential for affordable, effective technology solutions is driving the market for consumer-oriented educational products and services. Moreover, as many adults assume control of their own careers, they too, become purchasers of educational products and services.[5]

Other analysts have identified the societal problems that add to the growth of e-Learning for the consumer/home market:

With the emphasis on children's test scores and the keen interest parents have in their children's education, parents today are seeking alternatives to further the education of their children other than the typical six hours per day of classroom time. Parents are constantly searching for ways to help children learn, improve standardized test scores, and make learning fun in and outside the classroom. After-school programs, tutors, and the Internet are playing an increasingly significant role in furthering the education of America's children. With its vast information resources, the Internet serves as a fantastic tool for kids to perform research on topics of interest. Parents, too, are harnessing the power of the Internet as a source of educational content and a vehicle to purchase educational products and services for their children. In 1998 consumer purchases over the Internet were $37.3 billion, and are expected to increase sharply to $708.0 billion in 2003. (Source: Internet Commerce Market Model) Worldwide expenditures on consumer software for home education and edutainment alone were approximately $1.6 billion in 1998. ***We believe America's thirst for learning, together with the power of the Web as a tool for gaining access to learning resources, will continue to drive the demand for educational products and services for years to come.***[6]

Educational Products and Services

The consumer market for educational software has seen significant growth in the past decade and is expected to continue to have solid growth:

Educational Software

The consumer educational software sector has exploded in recent years, virtually creating an industry that was all but absent before 1990. Based on the trends we see, we expect growth in this sector to continue at a healthy 14% pace. PC penetration in the home has grown to 50%, accelerating with the introduction of the sub-$1,000 PC. This has given parents, especially those with lower incomes, another tool to help their children learn. ***More than forty percent of retail PCs sell for under $1000, with first-time buyers leading the charge in PC purchases.*** We expect that with increased investments in PCs will come additional software spending, particularly among first-time PC buyers, and that this will boost the PC software market in turn.

[5] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 170-177.
[6] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 88.

We estimate that the consumer software market in the United States was approximately $7 billion (up from $6.5 billion in 1997), and that it will continue to grow at 14% for the next few years. We further estimate that education's share of this market is $700 million. Other consumer software categories such as "personal productivity" and reference add an additional $125 million and $550 million, respectively, to that total In addition to rapid growth and the increase of PCs in the home, the consumer software industry in general, and the educational software business in particular, have been shaped by consolidation, falling average selling prices and technological change.

Three years ago, the U.S. retail market share of the two largest educational software companies was 42%. With The Learning Company and Cendant Software leading a consolidation charge, that percentage is now over 70%. These two companies, of course, have recently fallen to the same trends that they created, both being acquired by larger partners in the last few months. Cendant's acquisition by Havas and TLC's by Mattel have further changed the competitive picture in the consumer software market.

We believe that pricing has stabilized and that we will not continue to see dramatic price declines in the near term. However, we do think that demand will continue to expand for educational software, making future price reductions likely.

We expect that technological change will continue to affect both product content and distribution in the educational software market. Kids love computers, and learning can be enhanced by increasingly rich multimedia content delivered via CD-ROM, DVD or, increasingly, over the Internet.

Online Services

Online services for children are an emerging area where "fun" and "educational" can be combined. ***America Online has been particularly active in this area, with its AOL Kids "channel" and its investment in the FamilyEducation Network. Content companies and content aggregators have sprung up with the increasing penetration of this new media.*** Safe Internet sites for children, where only kid-appropriate content can be accessed include Juniornet and Searchopolis. Fun content sites include Headbone Interactive, Bonus.com and Cyberkids/Cyberteens. Children-oriented online services is one area we expect to see a great deal of activity in over the next few years.

Supplemental Materials

Consumers purchase $2.5 billion of the total $6.0 billion or so spent annually on supplemental materials as discussed in a previous section.

Educational Games and Toys

Only a fraction of toy industry sales are on educational toy products, but at 4-5% of a $22.5 billion industry, this makes educational toys a $1 billion segment. ***Moreover, it is one of the fastest growth areas in the toy industry as parents (and, of course, grandparents, who buy nearly 15% of all toys) strive to give their children a head start in a hyper-competitive economy.*** Given how fun and engaging many of these toys are, it may be that kids, who spend $24 billion of their own money annually and have a say in how nearly $200 billion is spent, may be among the purchasers as well.

Many of these toys are sold through specialty toy retailers who have created a niche in a highly competitive toy retailing environment. In general, consumers don't look for these toys at Toys-R-Us, which captured an 18.4% share of toy sales last year, or Wal-Mart, which had a 16.4% market share. Upscale buyers often look to Noodle-Kidoodle, Learningsmith, Zainy Brainy, Store of Knowledge and Imaginarium for merchandise with strong educational value. Specialty retailers

such as (Zainy Brainy, Store of Knowledge, Learningsmith, Noodle-Kidoodle, and Imaginarium) captured 4% of the toy retailing market, with their focus on unique products and excellent service.

Educational Books

We include children's books here since they are almost by definition, educational. The children's book component of the $5.6 billion "trade" publishing industry is $1.4 billion, or 25%, and is estimated to grow at 5.7% annually by Cowles/Simba Information. In addition, children's books likely capture a large component of books sold at mass marketers, book clubs and mail order, which combined account for an additional $3+ billion of book sales.

As for adult book sales, adult reference and self-help books accounted for approximately $500 million and $438 million, respectively, in 1997. While the reference category grew at 7% from 1993-1997, ***the self-help category grew at 21% over the same period.***[7]

Lifelong Learner Market

The lifelong learning market relates to the pursuit of hobbies and lifelong interests. The content in this market is very "sticky" because the market is driven by the love of learning about something that makes the learner "tick":

The Web has become much more than a place to track down driving directions and look up restaurant reviews. It has become a primary source of information and a part of a daily interactive ritual for a wide variety of people, where we seek and share knowledge on our passions and interests in life. It has become a place where we learn how to live a more fulfilling life.

According to IntelliQuest, 87% of people who visit the Web do so in order to pursue a hobby or a lifelong interest. These are not people shouldering the task of learning because their bosses order them to or because of degree requirements; these are people who love to learn and who aspire to reach their many personal and professional goals through the help of this new, dynamic environment.

Lifelong Learning portals recognize this passion, and have created a dynamic personal learning community where people enrich their life through exploration, transformation, and shared experience. SmartPlanet, for example, helps people pursue their interests--everything from cooking to money management to Web development--and advance their careers through professional development courses.

The dynamic, active content available on the Web lends itself to a unique, empowering experience. Lifelong Learning portals provide a more effective way of learning where, people can study, teach, share, and then act on their new knowledge, creating a uniquely rich and diverse experience. Through these integrated areas, people can directly exchange information and advice with like-minded people, easily review and buy services or products that make their passions come to life (e.g., cookbooks, travel gear, lessons), and access a wide variety of content that helps them to "see the whole picture." Lifelong Learning sticks with this unique combined approach.

Lifelong Learning content is generated from a mix of professionals, professors, authors, celebrities, and regular people. SmartPlanet's community authors, SmartPartners, are an integral part of the business model. They provide content, commerce, and community, and in return receive an entrance into a lucrative market with an efficient co-branded extension on the Internet.

[7] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 175-178.

> Most portals offer hundreds of courses in a variety of formats. Online instructor-led courses are taught by experts who present engaging lessons, hands-on projects, and answers to your questions. Other students in these classes often share great tips and tricks as well. Students can take self-paced courses that use a variety of knowledge builders, quizzes, streaming audio, and simulations to help you learn. Many of the self-paced courses are even created by portal members, eager to share their expertise.[8]

Home School

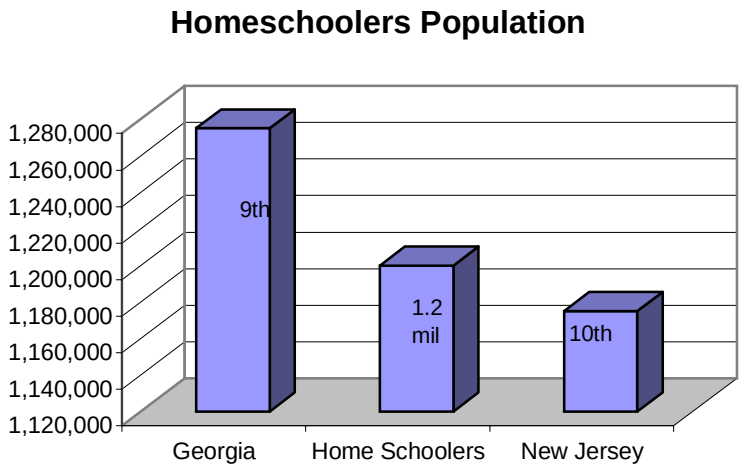
SunTrust Equitable indicates that home schooling is increasing at a faster rate than many of the other areas of education:

> With more than 110,000 schools and 53 million students, there is an abundance of opportunity in the public and private school market. ***One group of students that should not be overlooked is the rapidly growing home school market.*** According to Homeeducator.com, there are approximately 2.2 million children schooled in the home, thus illustrating the potential market opportunity. Further, the home schooled population is projected to grow by nearly 15% annually. Homeeducator.com states that, on average, ***a home schooler spends roughly $626 annually on educational materials, implying a total market size of $1.3 billion annually.*** Considering the parent is making the curricula-buying decisions, we believe that e-Learning companies can realize significant market penetration. Home schooled children tend to perform above national averages. Specifically, a Pennsylvania study showed that home schoolers, on average, scored at the 86th percentile in reading and the 73rd percentile in math, as compared to the 50th percentile national average. In addition to the Pennsylvania study, there are additional results that illustrate home schooled students excel over their school-bound counterparts. This demonstrates that the home learning environment is effective. We fully expect that K-12 e-Learning companies will be successful in realizing solid growth from this expanding customer base.[9]

Children who learn at home now outnumber the students enrolled in several states combined, as indicated by the following information from Merrill Lynch:

> In the purest indictment of the educational system, more than 1.2 million children are not enrolled in school at all. ***The population of home schoolers is so large, that there are now more children studying at home than there are public school students in Wyoming, Vermont, Delaware, North Dakota, Alaska, South Dakota, Rhode Island, Montana and Hawaii combined.*** Put another way, the population of home schoolers is larger than student populations in New Jersey and forty other states. While this market is hard to measure, our estimate puts the market at $500 million, based on per student expenditures of $400 on books and other supplies.
>
> Historically, many parents who taught their children at home were doing so for religious reasons, with an aim to infusing education with their religious beliefs and moral values. Increasingly, however, parents who are teaching their children at home do so because they believe they can offer a superior alternative to the run down or unsafe school, the ancient textbooks and teachers who may not have degrees in the subjects they teach. Indeed, studies show that parents do know best--home schooled children perform better on standardized tests than the general school population.

[8] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 53-54.
[9] Ibid., 46.



Source: Home School Legal Defense Fund,

> Alternatively, children who are home schooled may have needs that can't effectively be met by the public school system. Of the 1.5 million U.S. children who are taught at home, about 5-10% have learning disabilities. While all students benefit from one-on-one teaching, special- education kids may benefit most. Most public schools can't afford to give special-needs kids the full-time, one-on-one attention they may require.
>
> The Internet is also a tremendous resource for home schooling families, providing access and interaction like never before possible. And a variety of companies have enjoyed some success selling software, supplemental materials and other resources to home schools, proving business concepts that can later move into mainstream schools.[10]

The home school market has also been noted by USbancorp – Piper Jaffray:

> The number of students taught at home continues to rise as a number of parents show dis-satisfaction with school programs and attempts at reform. The top five reasons parents choose home schooling: higher academic performance, individualized instruction, closer family relationships, better interaction with peers and adults, and a safer environment. In a study based on 20,760 home-schooled students from 50 states, students taught at home scored higher on standardized tests than their public and private school peers in every subject and at every grade level. Almost 25% of the students were studying one or more grades above normal for their age. With the accessibility of computers, the Internet, technology-based educational products, and statistics such as the ones stated above, parents are exploring other ways to fulfill their children's educational and developmental needs.
>
> During the 1996-97 year, home-schooled students totaled 2.3% of all children enrolled in the U.S. K-12 market and 17% of the total non-public school population. Students in home schools outnumbered students in charter schools by over 10-to-1 in the 1997-98 academic year. If these trends continue, the home-school population could number well over 5 million by the 2005-06 school year. (Source: NHERI)[11]

[10] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 92.
[11] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 90.

K-12 Market

Although there appears to be unrest in the K-12 market with the rapid growth in home schooling and a rise in private schools, there is a fairly large amount of materials that are sold into the K-12 market. According to SunTrust Equitable, pressure to perform is mounting on schools, teachers and students and this will continue to advance the use of e-Learning in the formal K-12 setting:

> The K-12 market consists of approximately 112,000 schools in 15,000 school districts. According to the Department of Education, there are 3.1 million teachers and 53 million students nationwide. The proliferation of companies servicing this market, including publishers, special education, and tutoring companies proves that the opportunity of selling to schools has enormous potential. This is despite the highly bureaucratic and fragmented nature of the U.S. education system. K-12 schools spend $9 billion annually on textbooks and other academic materials, $6 billion on education technology, and $650 million on standardized testing. ***We believe e-Learning companies will gain a significant foothold in the K-12 market due to the inherent advantages of using the Internet as a complementary tool in an instructor-led learning environment.***
>
> The power of the Internet to transform the K-12 market lies in the ability to create and adjust lessons that can be customized for every student. There is enormous public and political pressure for increased testing and accountability in our nation's schools. Forty-eight states now mandate statewide testing. Teachers are forced to conform their lessons to state standards and education leaders stake their careers on next year's test results. The ability of the Internet to reach each child on his or her own level is one of the true benefits created by e-Learning. Assessment tests can be given frequently and lessons can be customized for each child based on objective diagnostics that adjust learning to each child's progress.
>
> As teachers become more accustomed to using the Internet, they will become "guides" to all the great educational web sites and products. E-Learning companies that are able to connect with teachers to drive student traffic to their sites will gain access to a population that spends $130 billion annually on discretionary items. Teachers can also "guide" parents to products that assist in the learning process. According to recent surveys, the number one concern of parents is their children's education. Still further, parents spend $19 billion annually on educational products.
>
> The potential for all-inclusive web communities is enormous. The Internet enables teachers and parents to share student information on an ongoing basis. Parents can now gain real time access to their child's attendance and academic performance. For parents, this promotes a proactive approach to their children's learning. No longer do they have to wait for report cards to view their child's progress. Children will get help in subjects before they become hopelessly behind and fall through the cracks of our school system.
>
> Although the use of the Internet in the K-12 segment is still in its infancy, rapid penetration by early movers is well under way. Headbone Interactive already has a registered user base of over 220,000 members. Its web site, www.headbone.com, recently topped Nintendo, Nickelodeon, and Yahooligans as the number one site for kids based on traffic. MaMaMedia.com has over 650,000 registered users for its portal designed for children aged 12 and under. MaMaMedia.com recently signed a strategic alliance with InfoSeek (NASDAQ: SEEK), whereby MaMaMedia.com will be a prominent feature on InfoSeek's GO Kids Center.
>
> The K-12 market consists of a total of nearly 15,000 school districts, 110,000 public and private schools, and 2.7 million teachers.

With the baby boom echo effect in full swing, enrollment in K-12 schools hit a record 53.1 million in 1999 and is projected to grow to 54.2 million by 2009. *(Source: NCES.)*[12]

Private Schools

Merrill Lynch indicates that the private school sector comprises about ten percent of the K-12 student population, with about $2.6 billion available to for-profit providers:

> Ten percent of American school children are attending private schools. Of these five million or so children, 50% are attending Catholic schools, 35% attend other religion-sponsored schools, and 15% attend non-sectarian private schools.
>
> ***The total cost of private education is $27.5 billion, of which we believe $2.6 billion is captured by for-profit providers.*** There are 26,100 or so private schools in the U.S., with 8,351 Catholic schools, 12,180 other religion-sponsored schools, and 5,563 non-sectarian schools. The stereotypical student at these programs couldn't be more different. Many Catholic schools are featured in the news for the remarkable success they have had in educating inner-city children and the tremendous support they receive from parents who scrimp to pay for tuition to help their children escape dismal public schools. The privileged kids attending one of the country's 778 private non-sectarian secondary schools, on the other hand, pay average tuition of nearly $10,000.
>
> Despite these extreme differences in family situation of these two examples***, we believe the motivations for parents sending their children to private schools is ultimately very similar. That is, a desire to ensure that their children receive the best possible education available*** to them, one which encompasses parents' hopes for their children's development and their futures.
>
> These schools are subject to the discipline of the market. If they aren't able to offer a superior education, environment or set of opportunities for children, parents will withdraw their business, and the schools will close. The presence of choice in this market has created a situation where education for children is the real beneficiary.
>
> The non-sectarian schools bring in tuition revenues of approximately $6 billion. This is a highly fragmented industry in which we believe most schools, although not all, are operating on a for-profit basis. A few companies have consolidated or developed clusters of schools in certain markets where they can gain leverage with advertising, hiring and other expenses as well as build a brand that reflects their educational philosophies.[13]

Computers in the Classroom

Technology spending has increased but what does the spending represent on the whole and is it making a difference? Merrill Lynch looks at some of the factors behind the numbers:

> Technology spending has increased at an encouraging 14% annually, from $2.1 billion in 1991-92 to $4.8 billion over the past six years. With public school expenditures exceeding the $300 billion mark, however, this still only represents 1.6% of the total.
>
> As with all statistics, to really understand the numbers requires getting behind them. According to a recent study by the CEO Forum on Education and Technology, a nonprofit organization of 21 U.S. business executives and educators, only 3% of schools are at the "leading edge" of effectively

[12] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 42-43.
[13] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 91.

> integrating technology into the classroom. Approximately 59% of K-12 schools in the U.S. are either without computers in their classrooms or have antiquated hardware. The other 38% are using computers in their classrooms, but not to their potential. So while the computer-per-student ratio has come down substantially, this simple number alone is not a sufficient proxy for the use of technology in schools. The bottom line is, we still have a long way to go before technology can fill its promise in America's schools.[14]

Post-Secondary

With the increases in both high school graduates and older college students, the post-secondary education market will need to accommodate and accelerate post-secondary learning by non-traditional means. USbancorp – Piper Jaffray provides the following snapshot of higher education:

- The U.S. higher education market consists of 3,700 education institutions and accounts for $22.5 billion in expenditures.
- Enrollment in institutions of higher education was over 14 million students in the 1996-1997 school year, and is expected to increase to 16 million by 2008.
- There are 6.6 million adults (person aged 25 and older) projected to enroll in higher education by 2007.
- The number of high school graduates is expected to increase 20% from 1995 to 2008 (from 2.5 million to 3.0 million).
- Sixty-five percent of all high school graduates go on to college.
- The number of students enrolled in distance education is expected to grow from 753,640 in 1998 to 2.2 million by 2002. (Source NCES, IDC)
- By 2003, over 50% of all higher educational institutions globally will be offering e-Learning programs to students. (Source: Gartner Group)[15]

SunTrust Equitable makes the case that, with so many older college students working to gain a better education, learning will have to become more accessible:

> The most important force driving post-secondary education, and online learning specifically, is the dramatic shift in student demographics. Today's university has a much greater percentage of older students than ever before. International Data Corporation estimates that ***adults over the age of 24 comprise 43.5% of higher education enrollees. Adding fuel to the fire is the fact that 75% of students over the age of 24 work while attending school.*** The key to success in this environment is to make the learning experience more accessible and enjoyable for the older student.
>
> Higher education expenditures exceeded $232 billion in 1996, the last year for which data is available from the Department of Education. In 1996, the post-secondary population included 15 million students, one million professors, and 1.7 million administrators (U.S. Department of Education). These figures are expected to grow as children of the baby boomers, or echo boomers,

[14] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 96.
[15] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 47.

reach college age. The National Center for Educational Statistics predicts that an additional 1.1 million students will enter college over the next nine years as total student enrollment grows to 16.1 million in 2008.

The Internet now serves as an inexpensive and efficient platform from which to deliver educational content. The popularity of distance learning also stems from the growing need on the part of many higher education institutions to reach out to nontraditional students, reduce costs, and increase enrollment. Distance learning will be one of the main issues dealt with by higher education institutions over the next several years. Those institutions that fail to adopt distance programs will ultimately be at a disadvantage.

As indicated by an IDC report***, the number of students enrolled in distance education courses is expected to realize a 33% compound annual growth rate from 710,000 in 1998 to 2.2 million by 2003.*** We believe that these estimates will prove conservative considering the rate individuals are accepting the Internet as a viable vehicle over which to conduct commerce.

In 1999, institutions spent about $305 million, or about 9.8% of their IT budgets, on distance learning technology. This number is expected to grow to $379 million in 2000. ***IDC estimates that spending on content creation accounts for the largest share (21%) of the distance learning budget.*** Items in this category include electronic textbooks, study guides, lab manuals, and other materials for lesson plans. Hardware was the second largest category at 19%.

Two years ago, videotape was the most frequently cited technology used for distance learning. Currently, web-based courses are most popular. As the following chart shows, 78% of the institutions that offer distance learning courses use web-based technology. This is due in large part to the increased speed of computers and the increasing availability of high-speed Internet connections. As bandwidth improves we will see this trend intensify.[16]

Extending Post-Secondary Audiences World Wide

In the following excerpt, Merrill Lynch distinguishes between the market places for working adults and traditional students. Merrill Lynch then goes on to point out the important role distributed learning will make in the international markets:

Working Adults: Working adults, who represent nearly 50% of post-secondary students (6.1 million individuals), in our view, are the perfect candidates for distributed learning courses. Working adults want to stay relevant in today's knowledge-based economy, yet when seeking education find many schools inaccessible, with either inconvenient schedules or expensive tuition.

- Among adults potentially interested in acquiring additional education or training, 54 percent report lack of time as a barrier, forty percent report that courses are not available at convenient times, and 25 percent consider distance between their home and educational institutions to be a barrier.

- Forty-one percent of participants in adult education said their "work schedule" made it difficult to participate in adult education, 37 percent said that "meeting times" constituted an obstacle, 30 percent said that family responsibilities interfered with their participation, and 22 percent cited the location of classes as a barrier.

[16] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 47-48.

Distributed learning enables adults to schedule in education alongside with work, family and personal obligations, providing them with a flexible, convenient learning solution.

Traditional Students: The benefits of distributed learning have also caught the attention of younger students who are currently enrolled in traditional campus-based programs. A growing number of younger college students are working while in school, meaning they too are tempted by the convenience and flexibility of distributed learning programs***. Approximately 84% of students at public, two-year institutions work while in school and 76% of students attending both public and private four-year institutions also work.*** Moreover, sixty-five percent of students at public two-year colleges enroll part time. Distance education presents younger students with a flexible, convenient solution to gaining an education while working.

International Markets: Unlike the U.S., where postsecondary education is relatively available, seats in postsecondary institutions in many parts of the world are limited. We believe that in the knowledge-based global economy, there is a huge opportunity to serve this pent up demand. Currently over 400,000 foreign students study in the U.S., spending $7 billion.

While many of these students study in the U.S. because they want the cultural experience of living in a new country or to attend a specific university, many likely came because they did not have access to a university education in their home country or did not have the diversity of choices that we enjoy in the U.S. We believe that for every one foreign student studying here, there are three to five students who would if they had the resources or the access. Distributed learning makes it possible to serve these students who would never have had this opportunity before. Sylvan Learning Systems has announced plans to own a network of up to ten institutions of higher learning in countries around the world to capitalize on this need. We think distributed learning could be a highly complementary part of this plan.[17]

The following projections about higher education enrollment from Merrill Lynch provide further indications that students will require new ways of learning:

Higher Education Enrollment Projections

Overall, public high school enrollment is projected to grow 26% between 1988 and 2008, with the majority of the increase expected to be concentrated in the western states. High school enrollment in the states of Nevada, Arizona, and California is projected to increase 98%, 79%, and 66%, respectively. In addition to the western states, Florida and Georgia are expected to experience large high school enrollment increases over the 20-year period, with projected increases of 47% and 46%, respectively. The increase in high school enrollment ultimately will make its way into the higher education arena, with 65% of college graduates going on to college.

High School Graduates

College enrollments are expected to rise 18% in the 18 to 24-year-old college population between 1996 and 2008, demonstrating the effect of the baby boom echo. In 2008, students from the 25 to 34-year-old age group are expected to account for 21% of higher education enrollment, and the 35-year-old and older group are expected to represent 17.8% of total enrollment.

Rising Use of Technology in Instruction

According to the Campus Computing Survey, a national study of the use of information technology in higher education, the marriage of technology and instruction is increasingly becoming more common in institutions of higher education***. Forty-four percent of college courses use e-mail***, up from 32.8% in 1997 and 8% in 1994***. One-third of all classes utilize the Internet,*** compared to 24.8% in 1997 and 15.3% in 1996. An additional 23% incorporate the Web into the

[17] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 124.

course structure, up from 5% in 1994. Moreover***, over half of college students in the United States will be surfing the Web directly from their dorm rooms***, and 84% will have Web access from some campus location, according to a Greenfield Online study.

Distance Learning Enrollment Projections

According to a study conducted by NCES, interest in using technology in education was rather light in 1995, with only 4% of respondents offering live interactive communication during instruction. However, 75% of higher education institutions that offered distance learning programs indicated that they planned to either start or increase their use of technology in distance learning. As we look back today, this study proved to be an earlier predictor of what was to come. The rising use of technology on college campuses across the United States is demonstrated by the dramatic increase in distance learning courses, which are expected to reach 2.2 million in 2002, up from 710,000 in 1998, a CAGR of 33%, according to IDC. The number of educational institutions offering distance learning programs is expected to grow dramatically as well. By 2002, IDC estimates that 85% of two-year colleges will be offering distance programs, up from 58% in 1998, and 84% of four-year colleges will be offering distance courses in 2002, up from 62% in 1998.

How Is Distance Learning Used?

It is more than just learning online though. The Internet has become a daily staple for many college students today. Over 60% of college students check out the Web daily and almost 85% own computers. (Source: USA Today) Also, ***of the $105 billion university students are expected to spend on everything from books to clothes to rent, $700 million will be spent online.*** (Source: Student Monitor) Moreover, college student spending over the Web is expected to reach $4 billion by 2002. (Source: Jupiter Communications) No doubt, the Web is wired into the daily lives of college students, creating huge opportunities for companies that offer products and services to students online.[18]

E Textbooks: K-12 and University

In the past, education book publishing was always very centralized, but now there are new ways for students to get their hands on the learning materials they need in school. Merrill Lynch discusses both the growth and the changes in distribution in the following excerpt:

U.S. schools purchase nearly $6 billion in new textbooks each year. The K-12 textbook market is estimated to be $3.1 billion in 1998, growing at 4.4% annually, and the university market is estimated at $2.5 billion in 1998, growing at 6.6% each year. Growth in these two sectors has been revised upward over the past few years, as schools and universities respond to demands for updated, more rigorous instructional material.

The textbook publishing sector is very concentrated, unlike many sectors in the education industry. The top ten largest college publishers, for example, accounted for over 85% of sales in 1997, according to Cowles/Simba Information, and the eleven leading K-1 2 publishers captured 96% of U.S. sector sales in 1996.

In 1998, Harcourt exceeded Houghton to earn the number three spot in K-12 publishing, in part due to the success of its reading series, Signatures.

Technology in general and the Internet in particular are impacting the publishing industry. One area that is being increasingly transformed – distribution of books including at the college level. It used to be that once a professor selected a book for a course, students had little choice but to head to the campus bookstore to buy it. Some bookstores developed a healthy trade in used books,

[18] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 48-54.

> which captured up to 70% of book sales annually. Still, students were for the most part captive customers.
>
> A couple of innovative companies are quickly stealing share from college bookstores, using the advantages of scale and convenience to outsmart them. Varsitybooks.com, CampusBooks.com, and BIGWORDS.com have emerged quickly as alternatives in a new race for student dollars.[19]

Supplemental Materials and Curriculum

Merrill Lynch also sizes up the supplemental education materials and curriculum:

> The U.S. spends $6.1 billion annually on non-textbook educational supplies and equipment. About sixty percent, or $3.6 billion of this is sold to institutions, with the remaining $2.5 billion sold to consumers. We expect this market to grow by 6% per year, driven by increasing per-student expenditures and an increasing student population.
>
> In addition, under site-based management, teachers and school administrators are given increased ability to determine how their budgets are spent, and we believe this could drive additional spending on supplemental materials: musical instruments, arts and crafts supplies, physical education equipment and manipulatives (physical objects) to help kids learn geography, math and science. Supplemental curriculum materials too, such as workbooks, lesson plans, video tapes and films in curricular areas are also widely sold, along with the more typical office supplies such as paper, copier toner and paper clips.
>
> The distribution of supplemental materials takes place through retail stores, direct mail and distributors. The market for distribution as well is highly fragmented, with 3,400 distributors. Just two brand name suppliers have any significant size, School Specialty, which holds 9% of the market and J.L. Hammett, which holds 2%.
>
> About 65% of the industry's sales go through distributorships, with contract stationers claiming 6%, office superstores 11% and mass merchants 18%.
>
> We believe technology will begin to change the way schools buy supplies and classroom tools. School Specialty and J.L Hammett have both developed e-commerce sites to complement their traditional catalogs, direct sales forces and retail outlets.[20]

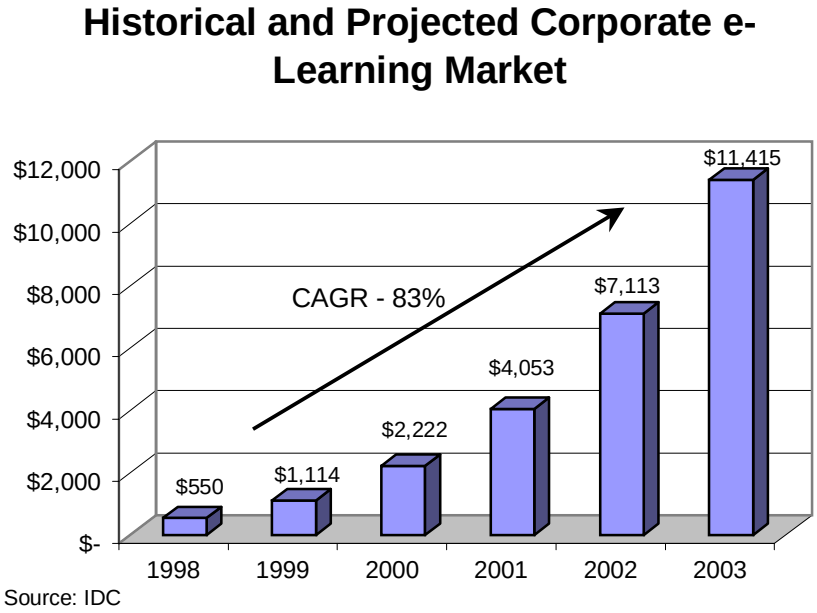
Corporate Training

Thomas Weisel Partners reference both *Training Magazine* and IDC for growth numbers in the corporate training market:

> According to *Training Magazine's* most recent annual survey, the market for formalized learning within U.S. companies is $62.5 billion. Given the scalable and distributive nature of web-enabled learning, this represents a substantial opportunity for e-Learning companies and investors.
>
> Supporting this investment thesis, IDC's newly revised market forecast for the corporate e-Learning market provides strong evidence that this is a market poised for substantial growth. IDC estimates that in 1998 the size of the U.S. corporate e-Learning market was $550 million. We believe an increase in available content, combined with technical innovations in delivery systems, bandwidth and software, will create a rapid uptake within corporations***. Based on these key***

[19] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 87-88.
[20] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 88.

catalysts, IDC predicts that by 2003 the corporate e-Learning market will grow to $11.4 billion, representing a five-year compound annual growth rate of 83%.



A closer look at *Training Magazine's* 1999 survey would clearly support IDC's predictions. Even today, 36% of the over 1,000 organizations surveyed are using the Internet to facilitate learning within the company. Furthermore, a full 54% are using computer-based content delivered via CD-ROM. Given the dramatic improvement in web technology and infrastructure, combined with the tremendous interactive and personalized nature of the web, we believe online courses will rapidly eclipse CD-ROM and other technology-based training mediums.

The IT training market provides a well-lit road map for the overall corporate e-Learning market. Not only does it represent a substantial sub-segment of the overall corporate learning market, but it is also a pioneering early adopter of technology-based delivery. According to *Training Magazine,* one-third of training delivered within U.S. organizations is dedicated to teaching employees how to use, maintain and implement information technology systems. Since IT training is so technology focused, it is not surprising that its practitioners were early adopters of desktop delivery. Internet delivered IT training is expected to overtake all other firms if technology-based delivery mediums this year.[21]

Untapped in Small Business

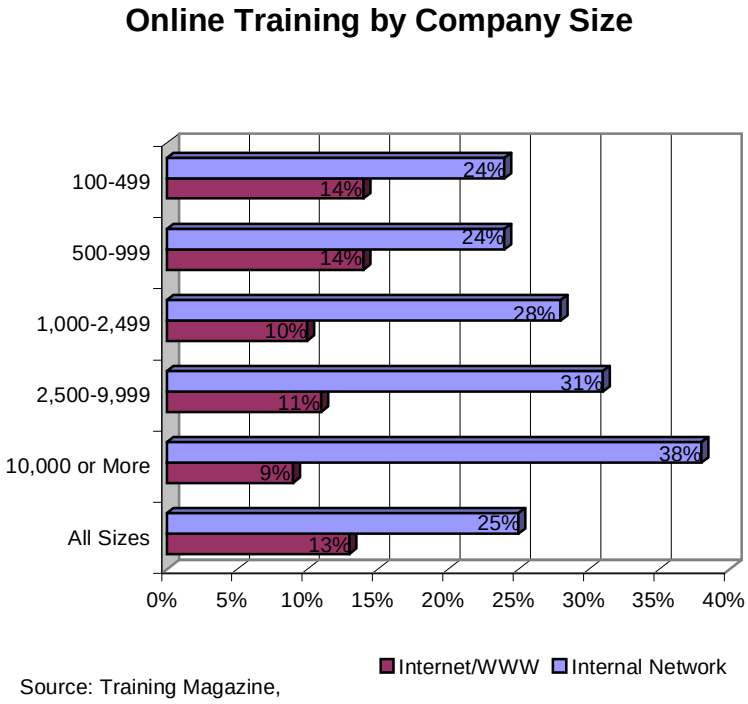
Most e-Learning providers have concentrated on the needs of larger corporations, which is often the case in a newer market. However, small- to medium-sized businesses are the ones that are more likely to access learning content from the web versus building their own internal learning environments. According to USbancorp – Piper Jaffray and *Training Magazine:*

> The larger a business becomes, the more likely it will train employees through its intranet instead of using the Web. Of all training delivered via computer, ***Training Magazine estimated that 38% of businesses with 10,000 or more employees use their internal intranet, whereas 9% use the***

[21] Thomas Weisel Partners, *Riding the Big Waves – B2B e-Learning* (Jan. 2000), 7-8.

Web. Conversely, of all training delivered via the computer, 14% of businesses with 100 - 499 employees use the Web and only 24% use their own internal computer network.

IDC estimated that the proportion of U.S. business PCs and network computers that use the Web grew from 33% in 1997 to 44% in 1998. IDC projects this proportion to reach 86% by 2002. We believe the increasing PC Web usage rates will only serve to enhance the popularity of Web-based training in corporations, as employees become more familiar with the advantages of training over the Internet.[22]



Source: Training Magazine,

Lots of Portals Appearing on the e-Learning Scene

WR Hambrecht points out the trend to provide various businesses with learning portals and the importance of first movers in the marketplace:

> The learning portal game is new, but exploding. We estimate that in 1999, about 100 learning portals went into business claiming to be the primary destination for learning on the Internet. Barriers to entry are low, as the cost of building an online portal is relatively small. Demand exists, since content providers need portals as partners to expand their distribution capabilities and customers are hungry for electronic training delivery. ***For a new portal, it is key to aggregate as much content as possible in the shortest amount of time in order to gain visibility and market share.*** We predict that new market entrants will come up with more diverse business models and increasingly offer value-added services to differentiate themselves from the competition. In particular, a number of portals will likely add authoring and collaborative tools to their product mix. In 2000, we expect to see even more new market entrants than in 1999, causing stiffer competition and beginning consolidation. While more competition is healthy, only so many Amazon.coms can and will survive. And, as with Amazon, first movers with established brand

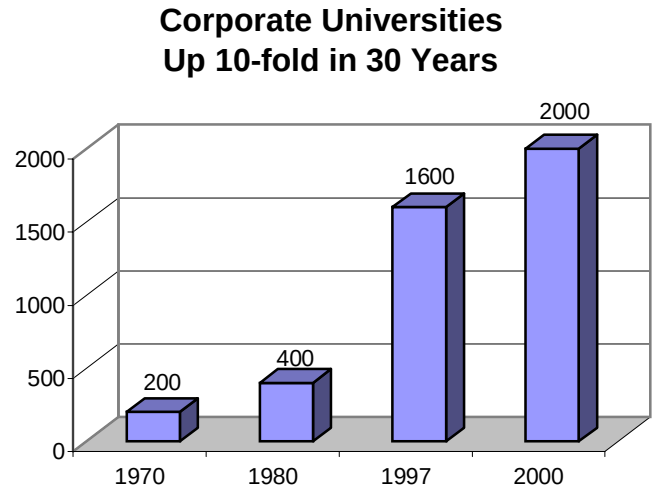
[22] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 80.

names should have a competitive advantage. Within the next 12 – 18 months, the learning portal war may well be over.[23]

Corporate Universities

Many larger corporations have created what is known as a corporate university to try and accommodate the needs of their employees. In the past 30 years, this trend for centralized learning has increased ten-fold as reported by Merrill Lynch and Corporate University Xchange, Inc.

> Consequently, employers in the new economy are spending tens of billions of dollars to increase employee skill levels, offering everything from remedial education to job training to executive education. The corporate-sponsored training market is huge, measuring over $60 billion for formal training in 1998 and serving approximately 54.5 million individuals***. Including Government training expenditures, which we estimate to be $38 billion, the training market is approximately $98 billion in size. Of this amount, we estimate approximately $19 billion are earmarked for outside expenditures, a figure growing at 13% annually.***
>
> Illustrating the heightened profile and importance of training is the rising number of corporate "universities." Corporate universities are formalized corporate education programs that cut across all company divisions. By the year 2000, expectations are for approximately 2,000 corporate universities, up from only 200 in 1970. To put this figure in perspective, there are currently approximately 3,700 post-secondary institutions in the United States.[24]



Source: Corporate University Xchange, Inc.

Outsourcing Megatrend

Merrill Lynch reports the following trend in outsourcing:

> The training industry is benefiting from the outsourcing megatrend, with corporations increasingly relying on the expertise of third-party specialists to provide the training and education necessary to

[23] WR Hambrecht + Co, *Corporate e-Learning: Exploring a New Frontier* (2000), 22.
[24] Merrill Lynch, *The Book of Knowledge* (Apr. 1999), 134-135.

prepare their employees. Of the $60 billion spent annually on training, $14 billion is outsourced, a figure growing at 12% annually per year. Including government training expenditures, we estimate that $19 billion of training is outsourced. As companies focus on core competencies, we believe the rate of outsourcing training functions will only accelerate.[25]

Critical Skills Shortage

Skilled labor is in short supply in corporate America. Merrill Lynch makes the following assessment:

> Corporate America is facing a shortage of one of the most valuable resources in our global knowledge-based economy--skilled labor. While the reasons for the skill shortage are many, the dismal state of our K-12 education system and its failure to prepare our children for the workforce is certainly at its core. The unprepared state of our high school students has expensive consequences for U.S. companies.
>
> - The Washington Post reports that approximately 33% of job applicants tested in 1995 by U.S. companies could not pass a basic skills test in reading and math.
> - According to PriceWaterhouseCoopers, 70% of the fastest growing companies say they are faced with serious problems finding skilled, experienced workers.
> - A survey conducted by the National Association of Manufacturers found that 37% of respondents were having difficulty introducing productivity improvements and 36% were having problems upgrading production technology due to employee skill shortages.[26]

USbancorp – Piper Jaffray cite the greatest training needs for improving skill in the workplace as follows:

> Regarding the various types of training required by employees, *ASTD Training Data Book and Skills for Success estimates* 65% of companies cite written communications skills as the greatest training need for support staff, while basic computer skills (63%), and interpersonal communications skills (62%) were a close second and third, respectively. However, as we examine the skill deficiencies of professional and technical personnel, 63% of companies cite interpersonal communications skills as the greatest training need, with listening (58%), and writing skills (58%) coming in immediately behind. Finally, the skills identified to be of greatest need by managers were performance improvement skills, including listening skills (69% of companies), interpersonal communications skills (67%), and basic computer skills (65%). [27]

Reasons Cited by Companies for Increased Skill Needs	
Increased Computerization	75%
More Teamwork/Participation	67%
Qualified Applicant Shortages	37%

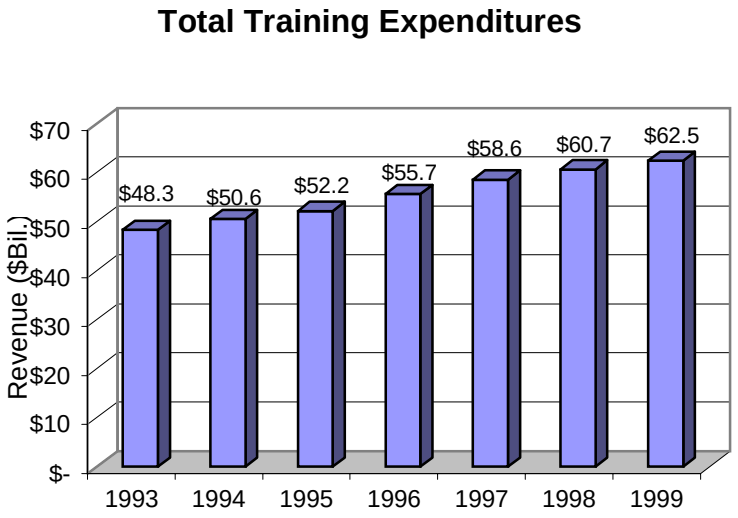
[25] Ibid., 136.
[26] Ibid.
[27] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 74.

New Job Descriptions	25%
Decreased Quality of Graduates	23%
Lags in Educational Curricula	22%

Source: Adapted from Olsten Corporation, Skills for Success, and The ASTD Training Data Book

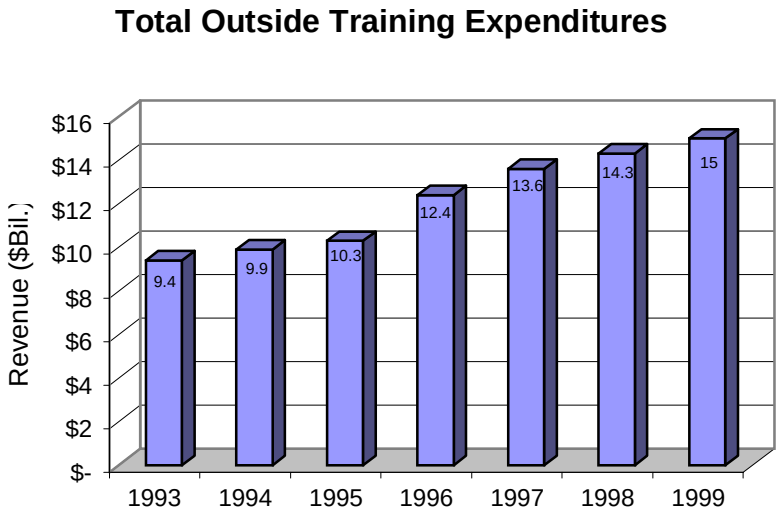
Training Expenditures

USbancorp – Piper Jaffray refers to two charts from *Training Magazine* to illustrate not only the total training expenditures but also the trend toward outsourcing more training needs[28].



Source: Training Magazine, October, 1999

[28] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 76.



Source: Training Magazine, October, 1999

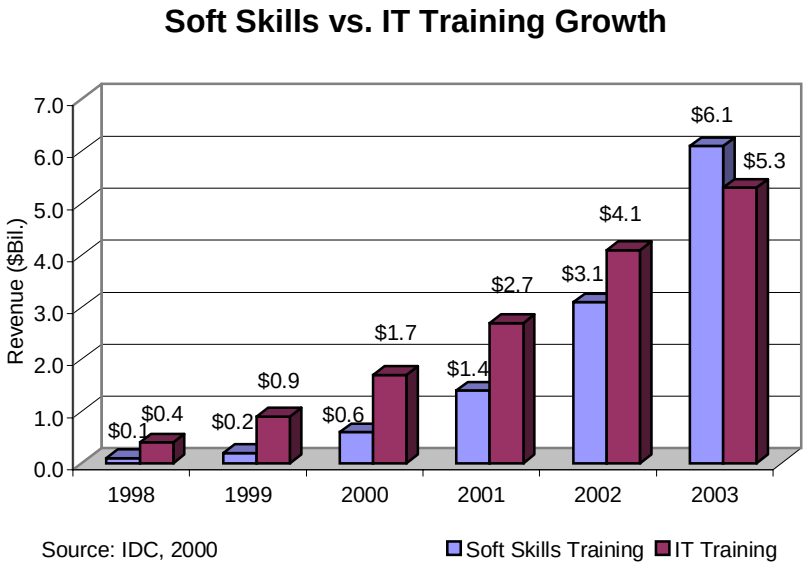
IT vs. Soft Skills Training

Although IT training jumped out to an early lead in training, especially training through the use of technology, soft skills or interpersonal skills will catch up, according to WR Hambrecht + Co.[29]

Corporate Training Market Size by Training Product and Delivery Method in 1999 ($ Billion)		
	IT Training	**Soft Skills Training**
Total Corporate Training Market	$31.19	$31.31
Outsourced Training Market	9.45	5.55
Technology-based Training Market	2.27	0.72
Web-based Training Market	0.87	0.20

Sources: Training Magazine, International Data Corporation, and WR Hambrecht + Co estimates

[29] WR Hambrecht + Co, *Corporate e-Learning: Exploring a New Frontier* (2000), 13.



IT Training Industry

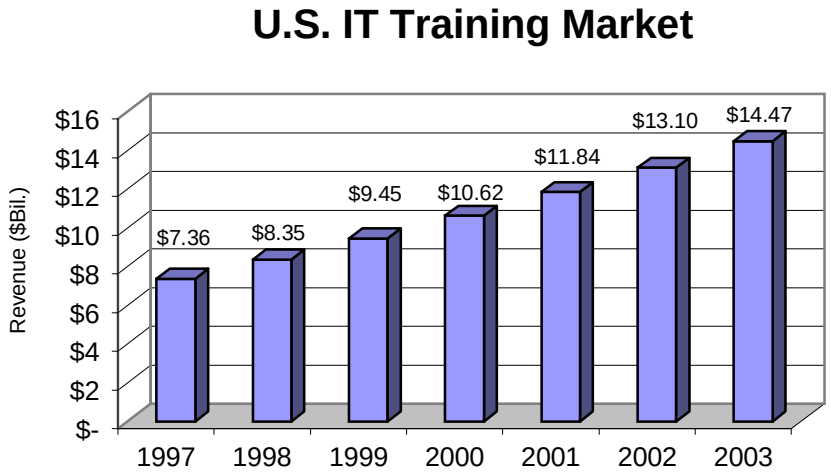
Dain Rauscher Wessels cites IDC in its report of unfilled IT positions in the U.S.[30]

Unfilled IT Positions						
	1999	**2000**	**2001**	**2002**	**1999-00 Growth %**	**1999-00 CAGR%**
Supply	3,685,408	4,054,397	4,460,331	4,906,907	33.1%	10%
Demand	4,061,566	4,468,235	4,915,624	4,507,808	33.1%	10%
Cumulative unfilled positions	722,158	759,838	801,293	846,901	17.3%	5.5%
Growth%		5.2%	5.5%	5.7%		

Source: IDC

According to Dain Rauscher Wessels, a shift toward web-based training will continue, as shown in the following graphic[31]:

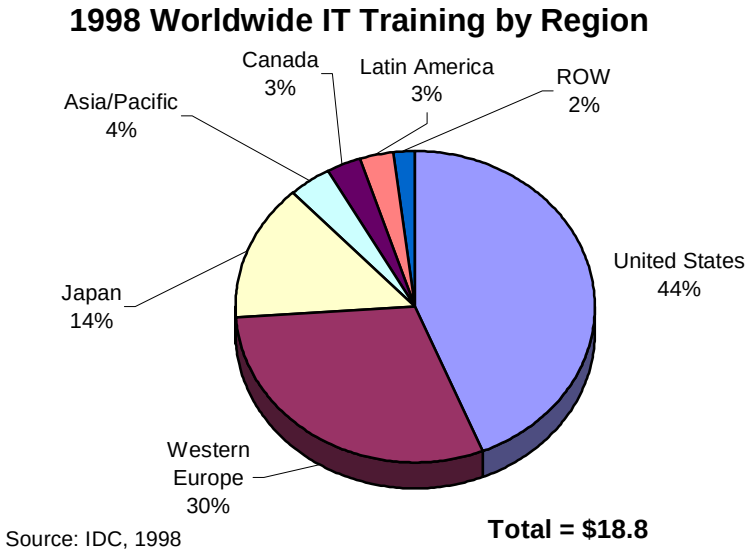
[30] Thomas Weisel Partners, *Riding the Big Waves – B2B e-Learning* (Jan. 2000), 75.
[31] Thomas Weisel Partners, *Riding the Big Waves – B2B e-Learning* (Jan. 2000), 76--77.



Source: IDC

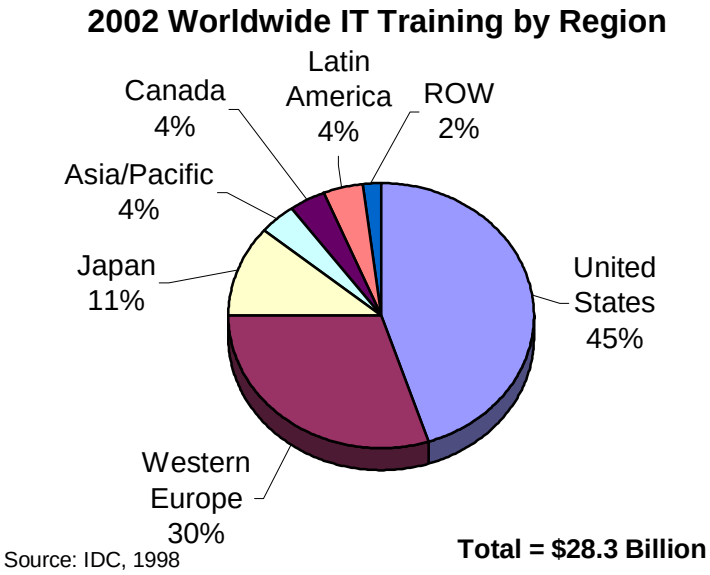
Worldwide IT Training

US Bancorp – Piper Jaffray uses the following charts to identify the worldwide marketplace for IT training and the growth trends from 1998 to 2002[32]:



Source: IDC, 1998

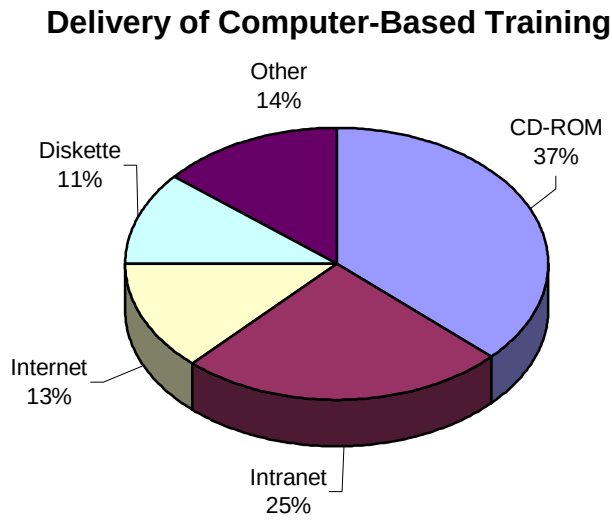
[32] USbancorp – Piper Jaffray, *Helping Investors Climb the e-Learning Curve* (Nov. 1999), 72.



SunTrust acknowledges the ongoing need for traditional training but projects most of the growth and revenue to be from e-Learning:

> Although there will always be a need for traditional training, we remain steadfast in our view that the future lies with corporate e-learning. Recent forecasts by IDC anticipate that Internet-based learning revenue will reach $11.4 billion by 2003, up from $234 million in 1997. This represents an 83% compound annual growth rate.
>
> It appears that corporations are increasingly realizing the benefits of e-Learning. ***Previous estimates by IDC projected that web-based learning in the corporate market would reach $5.5 billion. Now e-Learning revenue is estimated at $7.1 billion in 2002 and then rising to $11.4 billion in 2003. We believe that these estimates will prove conservative as the Internet's importance in everyday business activities rises.***[33]

[33] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 51-53.



e-Learning vs. c-Learning Projections

The overall learning marketplace is projected to grow between 10% to 15% and the growth in the corporate training market will grow even faster; however, in the next few years, the change in how training is delivered–from a c-Learning (classroom) model to an e-Learning (virtual) model–will be drastic.

SunTrust Equitable predicts that, due to bandwidth and other technology changes, e-Learning will become more interactive and therefore grow to take market share from c-Learning:

> Technology-based training continues its steady rise as the second most popular method of delivery for IT training (IDC). However, nearly 70% of respondents to an IDC survey still prefer traditional instructor-led courses, including seminars and classroom-based training. ***We believe the dominance by instructor-led courses will decline as the availability of bandwidth and interactivity increases.*** Also in the IDC survey, training purchasers acknowledged that from 1997 to 1998, technology-based IT training gained five percentage points in net share and accounted for 18% of the IT training services provided by external suppliers. The survey found that the larger the company, the greater the use of technology-based IT training as compared to other formats. We believe that this is primarily related to the ability to disseminate information quickly and efficiently through the Internet.
>
> Enthusiasm for Internet-based training (IBT) revolves around flexibility, convenience, and cost effectiveness. Decreased travel costs are also a significant benefit. Twenty-five percent of the companies interviewed for the IDC survey used IBT. Of those companies, only 62% have been using IBT for at least 18 months. At this time, larger companies appear to be heavier users of Internet-based technology as opposed to their smaller counterparts. Despite this, only 40% of large organizations started to use IBT less than 12 months ago. This illustrates that substantial opportunities remain for further market penetration by e-Learning companies. Additionally, ***the emergence of the ASP model to deliver training to customers will allow more small and medium-sized businesses to access training that was often financially out of reach.*** Companies such as Headlight.com are effectively penetrating the small and medium-sized corporations, a group that was largely underserved.

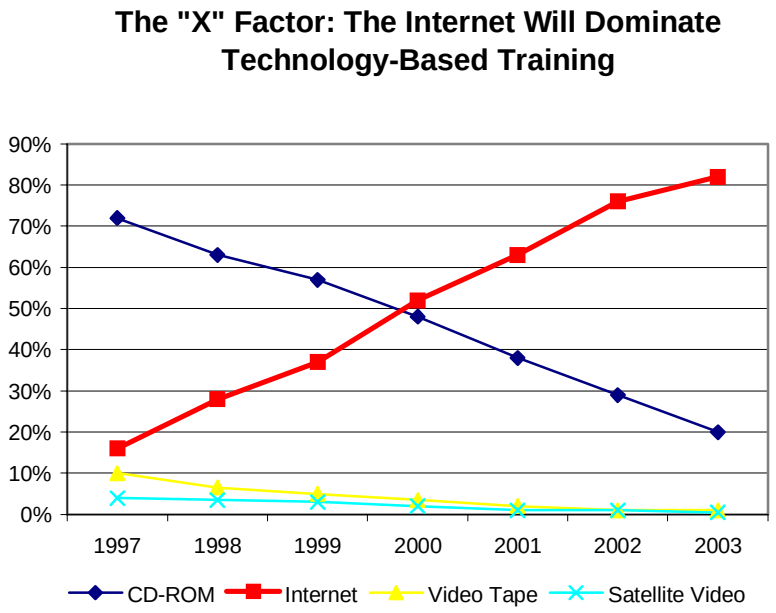
> Self-paced training constitutes the majority of courses delivered via the Internet. Less than a third of Internet-based training purchases is composed of live training facilitated by an instructor. Business unit managers are the strongest advocates of live training via the Internet. In 1998, live training via the Internet accounted for 41% of unit managers' total IBT purchases. As mentioned previously, we believe that the continuing introduction of increasingly robust and interactive IBT solutions will lead to increased market penetration of live Internet learning and collaboration products.
>
> The lack of human interaction is the most cited reservation to IBT (IDC). We believe that such a reservation will diminish with the advent of better-refined and more widely available interactive IBT tools. The second most often mentioned reservation regards the inadequacy of IBT to educate students on complex technical topics (IDC). Again, the introduction of increasingly sophisticated interactive IBT systems will resolve this dilemma. Most IT training purchasers agree that Internet-based training is best when offered in combination with other training delivery methods such as instructor-led, CD-ROM based, or text based. According to *Training Magazine*, 36% of online training is delivered through platforms upon which the student interacts with his/her instructor and fellow students, while 64% of trainees only interact with the computer. In 1999, CD-ROMs (37%) remained the leading method to train via a computer, followed by online intranets (25%). Web-based training reached 13% of all training delivered through the use of a computer.[34]

WR Hambrecht also provides numbers that indicate the changing environment of training in the corporate world, with projections of 33% annual growth in e-learning vs. 3% growth in c-learning:

> **Market share of e-learning and instructor-led training is evening out.** In 2000, the U.S. IT education and training market is projected to be a $10.6 billion industry, accounting for approximately 53% of the global IT training market. Technology-based training will make up 30% of the total, or approximately $3.2 billion. Whereas instructor-led training barely budges with a CAGR of slightly more than 3%, technology-delivered training is prospering at more than 33% annually. . . . By 2003, e-learning is projected to be a $6.7 billion industry, with a 46% share of the overall IT training market.[35]

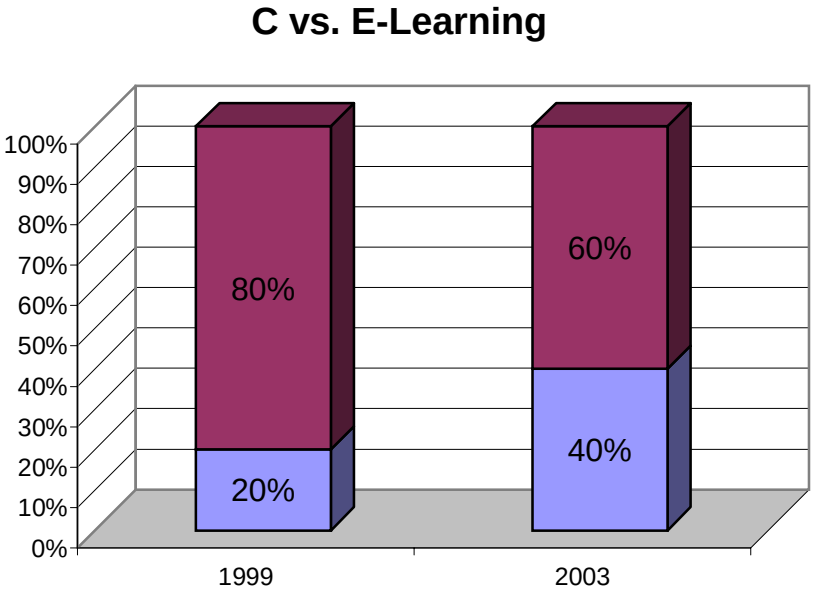
As suggested by the numbers in the following graph, Thomas Weisel Partners predicts that e-Learning will capture more than 40% of the overall corporate training market by 2003[36].

[34] SunTrust Equitable Securities, *e-Learning and Knowledge Technology* (Mar. 2000), 52.
[35] WR Hambrecht + Co, *Corporate e-Learning: Exploring a New Frontier* (2000), 25.
[36] Thomas Weisel Partners, *Riding the Big Waves – B2B e-Learning* (Jan. 2000), 9.



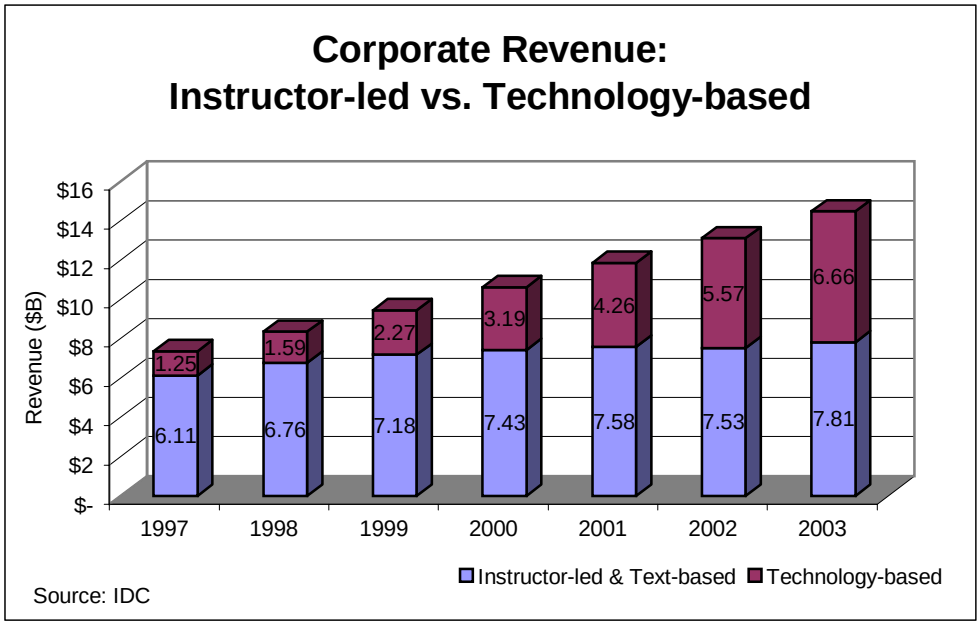
Sources: IDC

WR Hambrecht also refers to data in the following graphs which show not only the growth in the training market but also the change between e-Learning and c-Learning market share[37].



Source: Corporate University Xchange, 1999

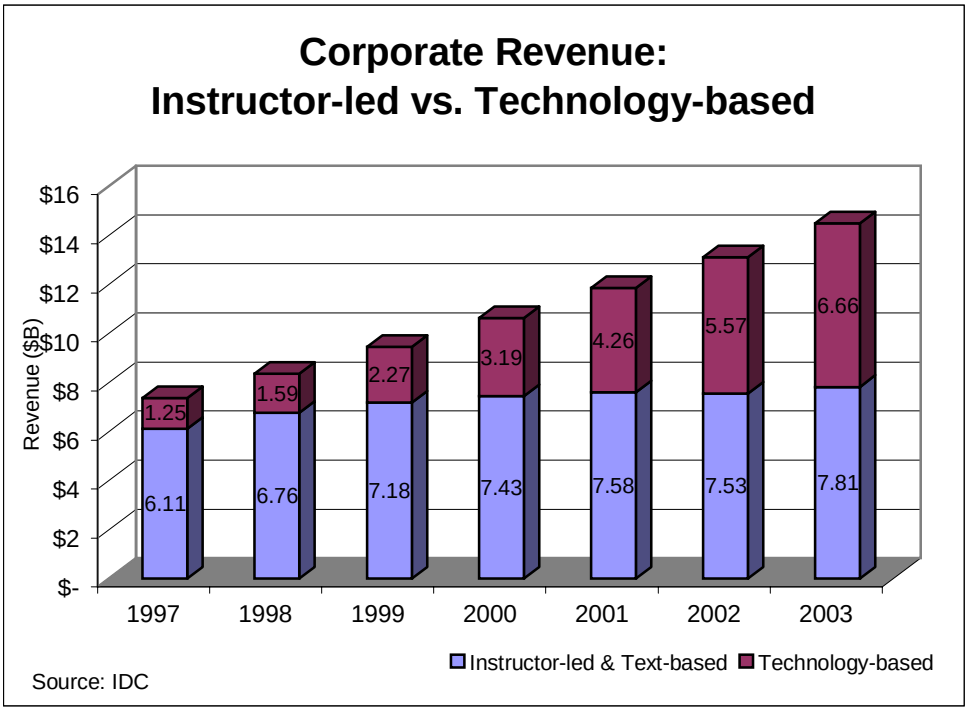
[37] WR Hambrecht + Co, *Corporate e-Learning: Exploring a New Frontier* (2000), 14 and 25.



WR Hambrecht expects the advent of increased bandwidth to have a significant impact on the media used to deliver technology-based training. The long-term leader will likely be a web-based model:

> **Web-based IT training taking off.** We expect to see significant changes in the delivery format mix in the years ahead. The days of CD-ROMs and videotape are numbered, as the Internet as training delivery medium is capturing virtually all the market growth. While CD-ROM training is stagnating and training via videotape is declining at an annual rate of over 18%, online training is exhibiting 56% incremental growth for 1999–2003. IDC projects that online learning will account for nearly 37% of the overall U.S. IT training industry in 2003, up from 9% in 1999***. One of the primary influences is bandwidth.*** In the corporate environment, bandwidth has vastly improved in the last few years, and is expected to continue as the adoption of switched Ethernet grows. DSL and cable modems to the home will likewise increase bandwidth to the home. Continued improvements in network infrastructure do not bode well for companies that rely exclusively on physical delivery of educational material and will facilitate the growth of Web-based training. Another reason for this surge is that many individuals seeking IT training are, by definition, comfortable with using technology, leading to less resistance to implementation and usage.[38]

[38] WR Hambrecht + Co, *Corporate e-Learning: Exploring a New Frontier* (2000), 25.


Corporate Revenue:
Instructor-led vs. Technology-based
Revenue ($B)
$16
$14
$12
$10
$8
$6
$4
$2
$-
1997
1998
1999
2000
2001
2002
2003
6.11
6.76
7.18
7.43
7.58
7.53
7.81
1.25
1.59
2.27
3.19
4.26
5.57
6.66
Instructor-led & Text-based
Technology-based
Source: IDC