Market Analysis
Program (MAP)

Industry Sector Markets 1989-1994

Education and Training

Forecast Update

INPUT®

1280 Villa Street, Mountain View, CA 94041 (415) 961-3300

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INDUSTRY SECTOR MARKETS 1989-1994

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Introduction

A

Purpose

The purpose of this forecast update is to provide the 1989 INPUT forecasts for the education and training market in addition to comments on recent market and competitive issues. This update should be used in conjunction with the cross-industry report issued in December 1988. Forecasts contained in this update are reconciled to those in the cross-industry report.

Cross-industry education and training refers both to training on computers and to computing and management courses for the information systems (IS) professional. Modes such as software and processing services include training in noncomputer subjects delivered by means of computers.

B

Scope

The term *training* refers to teaching how to use a particular IS product or system. *Education* involves teaching the purpose of IS or a particular IS product/system.

The following categories of service are included when purchased by an organization:

- Training and education in information systems (IS) for:
  - Professional IS practitioners, e.g., programmers
  - Users of IS, e.g., financial analysts

- Training and education using IS technology, such as software products on a PC, in any discipline or business function

Categories of services not included are:

- Any services purchased by an individual consumer
- Education and training services that are not IS-base or IS-related

C

Changes in Environment and Market

The effectiveness of education in computer literacy has dropped as computer systems and software have become increasingly more specialized. Students attending some private vocational schools have entered the work force only to find that their education has not adequately prepared them with the necessary skills for today's marketplace. This provides opportunities for the public and private sectors to equip students with the basic skills and for employers to provide the computer knowledge specific to their operating environment.

Employers are finding that even after prospective employees have the basic computer knowledge required for entry level positions, they need specific training on the software and methodologies used by the company. Companies such as Arthur Andersen and Massachusetts Mutual use computers to instruct employees on company procedures and methodologies as well as to continually upgrade employees' skills. Massachusetts Mutual has also reduced the turnover rate among new insurance agents through the use of computer-based training.

D

Events in the Market

The demand for education and training materials utilizing computers is expanding as more companies make use of the computer-based training (CBT) and interactive video instruction (IVI) technologies to instruct employees on subjects that were formerly taught as on-site classes or through self-study manuals. Companies are seeing the cost-effectiveness of computers as tools for educating employees on subjects ranging from basic computer skills to hazardous materials handling and critical life/death situations.

- Interactive training is being used in the industrial areas to teach safety and to provide workers with information to facilitate conformance with the Hazard Communication Standard mandated by federal, state, and local laws. United Auto Workers and General Motors used interactive laser disc systems to train more than 400,000 employees throughout the country. The cost savings included the cost of the actual delivery of the instruction as well as the benefits of 24-hour availability of the course. The interactive program also helped the employees learn the material and retain the information longer than had other methods used in the past.

- Interactive video discs and simulation training are being used by the medical industry to simulate medical emergencies and help technicians and medical personnel work through the emergency to a successful stabilized situation. Simulation training increased the effectiveness of medical technicians working in Middle East conflict zones to successfully treat more wounded than in the past.

Computer-based training (CBT) appears to have had one drawback in the past—it was thought to be too complex. Trainers thought that development of CBT courses was too complicated for noncomputer personnel; thus the advent of authoring packages. However, when computer-literate authors developed courses, often the course did not follow basic principles of training, such as stepping through the information, or review and feedback. Courses now exist to help the noncomputer-literate trainer plan and develop CBT courseware. There is also more emphasis on the technical person to become familiar with the basics of training, so both groups of people can effectively develop CBT courses.

Many of the IV-based training systems test students on the concepts learned, and then review the material, correcting misconceptions or wrong answers without the student's knowledge. This is an important factor in interacting with the student, so that he never feels as though he is receiving remedial training for incorrect answers.

Concurrent training is recognized in the marketplace as an efficient method of training. Concurrent training uses CBT to provide instruction about certain software while the software is in operation. It is very effective in teaching worksheet skills while developing a real worksheet.

Executive training systems are becoming a requirement in the education and training market. Many of these systems use artificial intelligence and simulation to do a type of "what if" analysis—to create scenarios in which the executive reacts and makes decisions—in order to test and increase his ability to make sound judgments in the business arena. These expert systems allow the encoding of knowledge rather than raw data. Artificial intelligence is also being used to write the instruction manuals that accompany computer-based training of any type.

Training and expert systems are becoming important as more companies support the users through a computer help-desk function. As the computer help desk becomes a more integral part of companywide information systems, help-desk personnel will need training on the specific components of the hardware and software installed. Also, training on the help-desk information data bases and the use of the data bases will become paramount to the success of the help desk and the successful delivery of the help-desk functions.

II

Market Forecast

A

1989-1994 Forecast

The education and training market continues to show application in the advanced training of IS users. Industry has found that there is a thrust for continuing education in order to advance skilled personnel and to keep in touch with technology.

The information systems (IS) manager is part of the management focus on technological advancements as the company takes on telecommunications, networking, distributed systems, integrated manufacturing, and a host of other new systems requiring computer support.

The market for cross-industry education and training services will grow at 13% compound annual growth rate to reach $4.8 billion in the U.S. in 1994. Professional services is the dominant mode of delivery, accounting for 83% of the market, as shown in Appendix A.

The highest growth rate is in the PC/workstation applications software product delivery mode, where INPUT forecasts a 20% CAGR, from $122 million in 1989 to $302 million in 1994. This growth is due to the efficiencies and cost-effectiveness of microcomputer training to provide employee education.

There is a shift away from the large systems applications to the use of PC/workstations that are more cost-effective for widely dispersed training. The unbundling of software and hardware makes the micro-based training attractive in that one piece of equipment can facilitate the training of multiple subjects, without a high price tag.

Advancements in technology such as the CD ROM and video chip technology enhance the cost-attractiveness and productivity of the training software. Software development tools for the microcomputer also aid in the development of effective training courses.

Interactive video and simulators will increasingly contribute to education programs. In the manufacturing area, shop floor employees are being trained in new techniques using interactive video instruction, while executives use simulation training to examine the effects of future manufacturing systems.

In market terms, however, most education and training is very customized to the individual organization. Hence, the market for standard products and services is not increasing rapidly. Enabling devices and software are growing far more rapidly.

B

Reconciliation with 1988 Report

Although many organizations recognize the need for education and training, there is hesitation on making expenditures, as training is still "an extra" to many companies and does not have a high priority. INPUT has therefore modified the growth rates in this market. See Appendix A for reconciliation of the current forecasts with last year's report.

III

Competitive Developments

A
Major Announcements

In late 1987, Apple Computer announced HyperCard™ software for the Macintosh computer to integrate text, images, animation, video, and sound. This development was expected to have a significant effect on the CBT market because HyperCard reportedly allowed users to organize files, create interactive videodiscs, and offered a degree of flexibility not previously available. Since the announcement, reviews have been mixed. HyperCard does allow many capabilities not previously available, but at the cost of being slightly tedious. It has not been widely accepted.

In mid-1989, Control Data Corporation sold its education units—the Control Data Institutes and the Institute for Advanced Technology (IAT)—to Human Capital Corporation, Edina, MN. Although IAT operates under its own name, other portions of the acquisition will operate under the name CDI Career Development Institutes.

In December 1988, National Education Corporation announced the completion of the acquisition of Spectrum Interactive, Inc. of Boston, MA. Spectrum reports to NEC through the Applied Learning International Division, headquartered in Naperville, IL. Spectrum is considered to be the research and development arm of Applied Learning.

B
Vendor Profiles

Profiles are included for the following vendors:

- Global Information Systems Technology, Inc.
- Digital Learning Systems, Inc.

COMPANY PROFILE

DIGITAL LEARNING SYSTEMS, INC.
4 Century Drive
Parsippany, NJ 07054
(201) 538-6640

Robert Stoeber, President
Private Company
Total Employees: 10
Total Revenue, Fiscal Year End 2/28/89: $2,500,000

The Company

Digital Learning Systems, Inc. (DLS), founded in 1982, develops training and orientation software programs that are distributed by major microcomputer manufacturers with their systems. DLS also offer disk-based advertising services and on-line reference books.

Key Products and Services

Approximately 40% of DLS' revenue is derived from its tutorial software products, 40% from disk-based advertising services, and 20% from on-line reference books.

DLS provides tutorial diskettes to microcomputer manufacturers who, in turn, provide the software with each system they ship. DLS is currently providing tutorial diskettes to IBM (PS/2), Dell Computer, and Tandy.

DLS develops marketing/sales demonstration floppy disks ("ad disks") for clients in various industries.

- The ad disks can be used for trade show exhibits, point-of-purchase, direct mail, sales presentations, and catalogues.
- The company has approximately 15-20 clients in this area, including Warner-Lambert, Augusta Aviation, and Rohm & Haas.

KeyNotes™ is DLS' family of on-line reference tools for any IBM-compatible microcomputer with a hard-disk drive.

- Current KeyNotes products include *Complete Secretary's Handbook* ($89.95), *Financial Mathematics Handbook* ($99.95), *The Associated Press Stylebook* ($89.95), and *KeyNotes Writer's Handbook* ($89.95).
- The products are available via a toll-free telephone call to DLS or through EggHead Software or First Choice dealers.

- DLS can also put any type of reference manual on-line as a customized service for any client requiring such a service.

Industry Markets

Over 40% of DLS' revenue is derived from computer manufacturers. The remainder of revenue is derived from sales/marketing departments of various companies and any microcomputer user requiring access to reference materials.

Geographic Markets

Approximately 95% of DLS's revenue is derived from the U.S. and 5% from international markets.

COMPANY PROFILE

GLOBAL INFORMATION SYSTEMS TECHNOLOGY, INC.
1800 Woodfield Drive
Savoy, IL 61874-9505
(217) 352-1165

Thomas Chen, President
Private Company
Total Employees: 50
Total Revenue, Fiscal Year End
12/31/89: $6,000,000*

*INPUT estimate

The Company

The founders of Global Information Systems Technology (GIST) were part of the development team of the PLATO computer-based training system at the University of Illinois. GIST was formed in 1979 to develop a new computer-based training system and to introduce computer-based training into the office automation environment.

Currently, GIST provides application software, turnkey systems, and systems integration services. GIST is also a value-added reseller for AT&T computers (6386 microcomputer through the 3B2 minicomputer series).

As of September 1989, GIST had approximately 50 employees, segmented as follows:

Marketing/sales	8
Customer support/software services	4
Product development	32
General and administrative	6
	50

Key Products and Services

Approximately 75% of GIST's revenue is derived from information services. Approximately 39% of information services revenue was derived from application software, 39% from turnkey systems, and 22% from systems integration, software maintenance, and training services associated with the company's software and turnkey systems.

- Non-information services, which contribute approximately 25% to revenue, include sales of standalone AT&T computers and the development and manufacturing of black boxes.

Accord^{TM}, introduced in October 1984, is GIST's computer-based training authoring and delivery system for UNIX environments.

- Accord consists of four components:
    - Authoring aids allow development of computer-based courseware.
    - Computer Management Instruction provides on-line course and lesson administration.
    - The TUTOR Language Processor includes TUTOR, a high-level language developed specifically for computer-based training, and the Runtime Executor.
    - The Training Management Utility Package includes modules for student management, resource management, course scheduling, and data base management.
- Accord operates on AT&T and compatible computers running MS-DOS, UNIX System V, or UNIX Berkeley 4.2 version operation systems. GIST sells the software separately or bundled with AT&T hardware.
- Software only is priced at $10,500. The price for turnkey systems ranges from $19,000 to $200,000, depending on the hardware configuration.
- Currently, there are approximately 300 software-only installations and 600 turnkey system installations.

The Training Icon Environment (TIE) is GIST's new MS-DOS-based system that allows courseware designers to create, deliver, and maintain interactive computer-based training applications, without programming assistance.

- The software supports any graphics package that works with Microsoft Windows. TIE is upwardly compatible with Accord and provides an interface to the Accord authoring system when specialized programming is required.
- Through December 1, 1989, TIE software is available for $1,500. A turnkey 80386 authoring workstation with VGA graphics is available for $5,500.

The Training Management System (TMS) is a turnkey training management system. TMS organizes and manages training scheduling, including information on instructors, training room facilities, training equipment, and students. TMS is available on 32-bit microcomputers or supermicrocomputer hosts.

GIST currently offers eight workshops for courseware development professionals.

- Workshops are usually hands-on exercises supported by student workbooks, software product manuals, and an on-site instructor. Workshops range from two days to a week in length.

- Workshops are available at GIST's training facility or at the customer company site. For on-site workshops, training costs are $600 per day plus $60 per student per day, and travel, lodging, and per diem expenses. For scheduled workshops at GIST, training costs are $600 per student per week. Class size is limited to ten students.

GIST provides additional services associated with Accord, including systems integration and software maintenance. Hardware maintenance contracts are available through GIST, although AT&T provides the actual hardware maintenance.

Industry Markets

In 1988, GIST derived approximately 80% of its revenue from the federal government and 20% from various other industries.

Geographic Markets

One hundred percent of GIST's 1988 revenue was derived from the U.S.

Computer Hardware

GIST has the following computers installed for research and development and customer support:

- 70 AT&T microcomputers
- 3 AT&T 3Bs

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ET-A

Appendix: Data Base

EXHIBIT A-1

Education and Training Cross-Industry Sector User Expenditure Forecast by Delivery Mode, 1988-1994

($ Millions)

Sector by Delivery Mode	1988 *	Growth 88-89 (%)	1989	1990	1991	1992	1993	1994	CAGR 89-94 (%)
Total Education & Training Cross-Industry Sector	380	14	435	472	514	563	620	686	10
Processing Services	90	3	93	95	96	98	100	102	2
- Transaction Processing Services	90	3	93	95	96	98	100	102	2
Applications Software Products	140	30	182	210	244	284	332	388	16
- Mainframe	30	22	37	39	42	45	48	51	7
- Minicomputer	20	17	23	25	27	29	32	34	8
- PC/Workstation	90	35	121	146	175	210	252	302	20
Turnkey Systems	150	7	160	165	175	180	190	195	4
Industry-Specific Professional Services*	1,819	18	2,146	2,447	2,789	3,180	3,625	4,133	14

* Education and training professional services data are not included as part of the total for the Education and Training segment. Instead, they are included as part of the professional services delivery mode, which is broken out by vertical markets.

Note: Numbers do not add due to rounding.

EXHIBIT A-2

Education and Training Cross-Industry Sector
Data Base Reconciliation of Market Forecast by Delivery Mode
($ Millions)

Delivery Mode	1988 Market		1993 Market			1988-1993 CAGR per data 1988 Rpt. (Percent)	1989-1994 CAGR per data 1989 Rpt. (Percent)
	1988 Report (Forecast) ($M)	1989 Report (Actual) ($M)	1988 Report (Forecast) ($M)	1989 Report Forecast ($M)	Variance as Percent of 1988 Report		
Total Education and Training Sector	381	380	733	620	(15)	14	10
Processing Services	91	90	110	100	(9)	4	2
- Transaction Processing Services	91	90	110	100	(9)	4	2
Applications Software Products	142	140	439	332	(24)	25	19
- Mainframe	33	30	68	48	(29)	16	10
- Minicomputer	21	20	35	32	(9)	11	10
- PC/Workstation	88	90	336	252	(25)	31	23
Turnkey Systems	149	150	184	190	+3	4	5

Note: Numbers do not add due to rounding.

About INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

Continuous-information advisory services, proprietary research/consulting, merger/acquisition assistance, and multiclient studies are provided to users and vendors of information systems and services (software, processing services, turnkey systems, systems integration, professional services, communications, systems/software maintenance and support).

Many of INPUT's professional staff members have more than 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed as a privately held corporation in 1974, INPUT has become a leading international research and consulting firm. Clients include more than 100 of the world's largest and most technically advanced companies.

INPUT OFFICES

North America

Headquarters
1280 Villa Street
Mountain View, CA 94041-1194
(415) 961-3300
Telex 171407 Fax (415) 961-3966

New York
959 Route 46 East, Suite 201
Parsippany, NJ 07054
(201) 299-6999
Telex 134630 Fax (201) 263-8341

Washington, D.C.
1953 Gallows Road, Suite 560
Vienna, VA 22182
(703) 847-6870 Fax (703) 847-6872

International

Europe
Piccadilly House
33/37 Regent Street
London SW1Y 4NF, England
(01) 493-9335
Telex 27113 Fax (01) 629-0179

Paris
52, boulevard de Sébastopol
75003 Paris, France
(33-1) 42 77 42 77 Fax (33-1) 42 77 85 82

Tokyo
Saida Building
4-6, Kanda Sakuma-cho
Chiyoda-ku, Tokyo 101, Japan
(03) 864-0531 Fax (03) 864-4114