I

Introduction

A
Purpose

The purpose of this forecast report is to identify key changes in the market for information services in the education sector, and to provide the 1995 INPUT forecast for this market sector.

Sector Definition—The education information services market includes SIC codes 821, 822 and 823 and is divided into three principal applications subsegments:

- Administrative applications
- Academic research/courseware applications
- Library applications

Administrative applications include education-specific administrative applications and networking of intra- and inter-campus IS resources.

Academic research/courseware applications contain software for curriculum instruction and computer literacy at all academic levels, including vocational/technical schools. It also includes teacher, professor or department-specific research projects.

Library applications comprise catalog maintenance and information retrieval, circulation control, loans and reservations, acquisitions, periodical control, indexing, and text search and retrieval. Also added are on-line library computer services, incorporating search and cataloging services.

B
Organization

The balance of this report is organized as follows:

- Chapter II—*Trends, Events and Issues*, discusses the effects of educational reform, technology and budget concerns at all institutional levels. This chapter also looks at other issues, activities and changes that can have an impact on the current and future use of information services in the education marketplace.

- Chapter III—*Information Services Market*, presents an analysis of the expenditures for information services by product/service market and submarket for the U.S. education market sector. This chapter also includes an evaluation of the impact of the Internet on education and provides conclusions and recommendations regarding this market. ~~This chapter also includes an evaluation of the impact of the Internet on education and provides conclusions and recommendations regarding this market.~~

- Appendix A—which contains the *Forecast Database*, presents a detailed forecast of user expenditures by information services product/service market and submarket sector, for the education vertical market. A reconciliation to the previous forecast is ~~also~~ provided.

C
Methodology

Ongoing Research—Much of the data upon which this report is based ~~has been~~ was gathered during late 1994 and the first half of 1995 as part of INPUT's ongoing market analysis program. Trends, market sizes and growth rates are based on INPUT research and in-depth interviews with users in the education marketplace and the information services vendors serving that market. Interviewees for the research portion of this report were selected from this database of contacts.

Resources—INPUT's corporate library, located in Mountain View, California, provided extensive ~~research~~ material for this report. The resources in this library include on-line periodical databases, subscriptions to a broad range of computer and general business periodicals, continually updated files on more than 3,000 information services vendors, and the most recent U.S. Department of Commerce publications on economic and industry statistics.

Forecast Estimates—Vendors, in response to interviews or questionnaires, may be unwilling to provide detailed revenue breakouts by product/service market segment or industry. Also, vendors often use different industrial categories and industry segments, or view their services as falling into different product/service market segments from those used by INPUT. Thus, INPUT must estimate revenue for these categories. For this reason, the product/service market forecasts and industry segment forecasts should be

viewed as indicators of general patterns and trends rather than specific, detailed estimates for individual years.

D
Related Reports

In addition to this market-specific report, the reader may also be interested in other INPUT ~~related~~ reports, which address specific product/service markets and the U.S. and worldwide markets for information services. Such reports ~~would~~ include the following INPUT publications:

- *U.S. Processing Services Market, 1995-2000*
- *U.S. Systems Integration/Professional Services Market, 1995-2000*
- *U.S. Network Services Market, 1995-2000*
- *U.S. Applications Solutions Market, 1995-2000*
- *U.S. Outsourcing Markets, 1995-2000*

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II

Trends, Events and Issues

A
Background

As noted in the 1994 Education report, this market is not so much a defacto industry as much as it is an institution. But it is an institution that is constantly under intense scrutiny, always judged on the basis of overall quality, content, equality and value.

In the United States, the right to an education is fundamental and guaranteed by law. Beyond this, the processes and methods of education are often hazily defined and therefore prey to interpretation and controversy. The United States Constitution, for example, frames a government that is separate from the church. Yet in education, a government service, the teaching of the theories of evolution and creationism, and the suitability of school prayer (or moments of silence), are heatedly debated topics among religious groups, parents and educators.

The theological content of education is not the only ongoing controversy. Ethnic leaders, educators and parents continue to debate how the history taught in schools should be revised to more accurately relate the historical contributions of African, Asian and Native Americans to our nation. In English and literature classes, standard source materials, like Twain's *Huckleberry Finn* and Shakespeare's plays, have become controversial for their apparent racial language and violent content.

However, within this context, the needs of students continue to drive both the philosophical and technological requirements of modern education. There are a number of trends, events and issues that will influence this market in 1995. Many of these will continue to shape the education sector through the end of the century. The balance of Chapter II discusses and analyzes these market influences.

B
Overview

In contrast to most other industry sectors about which INPUT prepares information services market forecasts, the education market is relatively stable. There is a predictable flow of students (in essence, the market's "customers"). Most of the sector's financials, sources and expenditures of funds, are accessible in public records. And its environment and activities tend to be highly structured and slow to change. As a result, the overall assessments of this marketplace contained in INPUT's 1993 and 1994 reports on the education sector are still valid. Significant changes that affect the information services market are noted in this forecast update and discussed in this and the following chapter.

C
Trends and Events

1. Education Industry Growth

Fundamentally, education is a growth industry. This section examines the numbers which reflect that growth, emphasizing changes in enrollment, the teacher population and expenditures for education and academic libraries.

Enrollment—According to the Department of Education (DOE), the number of students enrolled in U.S. schools and colleges in late 1994 was about 64.5 million, an increase of less than 1% over the 63.9 million in 1993. This is expected to grow to 65.6 million by the end of 1995. Between 1995 and 2000, the total student population in U.S. schools is projected to grow to 69.8 million, an increase of 4.2 million or 6.4%. In grades K-12, the most significant growth will be in the public school system, which in 1995 will represent 88% of this segment. This will remain constant through 2000. Another agency, the National Center for Education Statistics (NCES), projects public school enrollment will reach 32.3 million by the end of 1995, growing to 34.4 million by 2000. From the fall of 1994 to the fall of 2000, NCES forecasts a growth of 8% in public elementary school enrollment. The agency forecasts a 12% rise in public secondary school enrollment for the same period.

Enrollment in higher education, colleges and universities, rose to 14.7 million in 1994, a 0.7% increase over 1993. In 1995, enrollments are expected to narrowly miss 15 million. By 2000, college and university enrollments will reach roughly 15.5 million, a growth rate of 3.4%. Some economists expect the average annual cost for college tuition to decline, by as much as 4%, due to this projected increase in the higher education student pool.

Teacher Population—According to DOE figures, for all education segments, the teaching population stood at nearly 3.8 million in 1994, an increase of 1.5% over 1993. This is expected to grow to roughly 3.9 million by the end of 1995, a further increase of 2.3%. By 2000, the number of teachers will rise 5.1% (~~3.9M to 4.1M~~) to ~~reach~~ approximately 4.1 million. The teaching population in public schools is still much larger than in private schools. In 1994, for example, 83% of all teachers worked in public schools. DOE projections show this percentage will remain constant until 2000.

Although never the wealthiest of professions, the value of teachers' salaries rose roughly 13% between the 1983-1984 school year and the 1993-1994 school year. Although much of this increase occurred in the 1980s, the average teacher's salary in 1995 is expected to be about $36,000 per year.

Expenditures—Expenditures for all education levels, kindergarten through postgraduate, reached $484 billion in 1994, representing 7.6% of the U.S. GDP. Of this total amount, the K-12 segment spent nearly 60%, with the remainder spent by colleges and universities. The $484 billion spent in 1994 represents a 4.6% increase over the $463 billion spent in 1993. However, 1993 expenditures represented slightly more of the GDP, 7.7%. INPUT expects educational spending to remain at the 7.6% level, or decrease slightly, during the first 24 months of the forecast period. This is due to a flurry of budget-cutting activity in the Federal Government over the last year as the Clinton administration has fought with the House and Senate over ways to reduce the federal deficit. Public school programs for extracurricular activities, such as sports teams, have already been affected in states like California and Texas.

Academic Libraries—Expenditures for libraries fell from 3.3% of college budgets in the mid-1980s to about 3.0% in the early 1990s. Currently, they are stabilizing at about 3% and should remain at that level through the balance of this decade. Expenditures at the K-12 level are less, due to the narrower range of topics and research media (e.g., on-line computer systems).

2. External Trends and Events

As they have been for the last few years, the primary external trends affecting education programs and expenditures continue to be:

- Budget restraints resulting from decreased tax revenues and the slow pace of recovery after the recent economic slowdown
- Diversity in the student population, causing many and varying educational requirements
- A wide variance in school facilities, based on the level of local, district or county support

- Curriculum reform

Each of these trends is discussed in further detail below.

a. Budgets

Budgets for public schools, colleges and universities remain ~~a priority~~ of primary concern. Funding for these institutions still comes primarily from taxes. However, the *26th Annual Phi Delta Kappa/Gallup Poll of the Public's Attitudes Towards the Public Schools*, published in late 1994, showed that many people remain unhappy with the way they are taxed to support schools. According to that poll, 53% of the public views current tax policies for funding education as unfair.

The poll noted that people are primarily unhappy with the inequalities in school funding because of the features most states have in their tax system. This often results in tax revolts, such as the one in Michigan in 1993 ~~where~~ in which the local property tax was abandoned due to controversy over its ability to fund public schools. In most states, property taxes are the primary funding source for schools. However, protests from people with no children, or those whose children are not in public schools, is causing a shift away from property-based taxation in favor of sales tax increases to fairly distributed funding.

States are under increased pressure to produce funds for public schools, due largely to the current financial climate on Capitol Hill. Reducing the federal deficit is a top priority for Democrats and Republicans alike, particularly since the latter party gained majority control after the November 1994 elections. Nevertheless, President Clinton continues to struggle with both parties over the best way to cut government spending. One proposed strategy is to turn many federal responsibilities over to state governments. This would include more funding for public education, which would put more pressure on state and county governments to raise school taxes.

However, education is still a high priority for the Clinton Administration. The President's Goals 2000: Educate America Act was signed into law in March 1994. The act is designed to provide up to $400 million per year to give education grants to states and school districts so they may adopt reforms consistent with the act's purpose of creating national education standards. This would form the heart of an overall public education framework to increase academic excellence by more strongly connecting curriculum, instruction, assessment and standards. Title III of Goals 2000 provides funds for each state's efforts to improve its own academic standards, with the proviso that more funding will be available based on the assessed improvements in education, notably student achievement and instruction quality.

Another component of Goals 2000, Title II, has unfortunately been virtually shut down. Title II created the National Educational Standards and Improvement Council (NESIC), a federally funded body whose purpose is to establish national content and performance standards in academic subjects and evaluate those devised by state governments. The NESIC is designed to lead by example, giving states the primary creative responsibility for improving public education. Although this Goals 2000 component was supported by many Republicans in 1994, the majority they achieved after the November elections expressed little interest in funding an agency for national education standards. Many analysts and government officials view the NESIC as a dead entity.

Overall, progress has been slow for Goals 2000, yet the act is having a positive impact. INPUT believes Goals 2000, particularly the Title III component, is a key means of coordinating standards and funding to improve education through the end of the decade.

b. Diversity

Diversity takes many forms in the educational environment. It includes those with different learning capabilities, language skills, economic backgrounds, ethnic origins and an increasing number of physically handicapped individuals who can be a part of the educational process. Virtually all educational systems now recognize diversity as a normal component of the educational process, and most teachers are skilled in dealing with it in the classroom.

The personal computer has proven to be a superb tool for coping with a heterogeneous group of students with varying educational needs. With a PC and any of the numerous sophisticated education software packages available, a teacher can tailor instruction for the appropriate level for a given student. This establishes instructional consistency in the classroom, without overburdening a teacher who may well be overtaxed already.

So, although diversity is a challenge, hardware and software technologies are helping to remove it as a major educational stumbling block. The unfortunate reality of budget constraints remains, however, so many school systems must rely on older technology or solicit donations due to the cost of PC systems.

c. Variations in School Facilities

There are unfortunate inequities throughout the U.S. public education system, and they are nowhere more apparent than in the wide variety of facilities schools use on a daily basis. For example, a middle school in a working-class section of the Bronx is less likely to have the kind of equipment

and materials available to a comparable school in Beverly Hills. This is particularly true when the equipment in question is computers and related software and hardware. Yet one fundamental problem most public schools, colleges and universities share is the daunting expense of wiring existing classrooms with the electricity and telecommunications lines necessary for each student to have a computer.

The less costly alternative to bringing computers to the students is to bring the students to the computers. More and more public schools are doing this by creating and equipping special computer rooms, commonly called learning centers or computer laboratories, where students can go during school to use computers loaded with the courseware appropriate to their work needs. In fact, many educators, particularly in primary and secondary schools, prefer this method because they often see computers as a distraction from traditional teaching methods. In more advanced school computing environments, students are able to electronically turn in homework to the teacher using learning center PCs on a local area network (LAN)-based, client/server system.

LANs are not the only means of connecting school computers. The use of on-line network access is gaining credibility as a means for one school or an entire district to educate and administrate over the Internet. In Naples, Florida, for example, students and teachers use the Florida Information Resource Network (FIRN) to conduct interactive educational exercises with students in other Florida schools and in other countries. FIRN users have free access to electronic mail which allows students and teachers to interact on such things as professional development and student projects. Students can also work on projects with counterparts in other countries, such as England, that use similar systems ~~in use~~.

Colleges and universities tend to be much better equipped, technologically speaking, because of the typical demands of their curriculum. For schools at all levels, however, the power and telephone lines we take for granted in business are absolute essentials. Without these resources, the value of the computer in the school or classroom is greatly diminished.

d. Curriculum Reform

According to the Phi Delta Kappa/Gallup poll referenced previously, the U.S. public does not feel that schools emphasize the so-called three Rs of reading, writing and arithmetic, along with science and history. Yet the poll indicates that the public also wants a broader curriculum, one that places high emphasis on foreign language, music and art. Computer training and business education are also subjects that parents want their kids to learn.

An argument has been added to curriculum discussions ~~over~~ whether subjects should be taught from a monoculturistic or multiculturistic point of is

view. Some parents and religious groups have protested the "tendency to abandon the melting-pot metaphor in favor of 'tossed salad'," according to one educator. This "tossed salad" approach is controversial because it emphasizes each ethnic group's cultural traditions rather than the common traditions Americans share. According to the Kappan/Gallup poll, 75% of the public favors the promotion of both common and diverse traditions, yet this aspect of curriculum reform remains a heated topic.

3. Information Services Trends in Education

Information services activities in education tend to fall into three broad categories—academic courseware, administrative applications (for K-12 and higher education) and expanded on-line and CD ROM services for academic libraries. Each area is briefly considered in the following paragraphs, and is consistent with INPUT's prior analyses.

a. Academic Courseware

There has been steady progress in the acceptance and quality of computer-aided instruction (CAI) in K-12, where many now regard computer literacy as a fundamental skill. In fact, the U.S. Department of Education estimated that by the fall of 1993, 68.9% of all U.S. K-8 students used microcomputers. The figure for grades 9-12 was over 10% lower at 58.2%. Higher education has been slower to embrace commercial courseware (due to an ingrained belief that university instruction is somehow unique), but there too, acceptance of CAI is growing. Between 1989 and 1993, student use of computers in the first through fourth year of college rose from 39.2% to 55.2%. The future for such courseware, however, is generally believed to lie with client/server systems (e.g., IIS or ILS), and for most schools, client/server and the microcomputer (PCs, Macintosh) will be the vehicles for implementation. Multimedia will also offer the opportunity for integrating educational modules to stimulate all the senses and improve and enhance the learning process.

b. Administrative Applications

Although academia is not generally regarded as a business environment, the fact is the education process must run with balanced budgets and proper accounting for resources and student achievement. There is an expanding family of K-12 administrative applications designed to improve the management and accounting process and automate record keeping. Such applications are particularly those incorporating Information At Your Fingertips (IAYF) technology. Most of these applications are microcomputer-based. In higher education, the major activity is the expansion of local (campus) and national networks to permit effective resource sharing and improved instructor productivity. Most institutions are also exploring the benefits of multimedia

instruction. The primary concern is cost, and such systems tend to be as effective as their weakest component.

c. Academic Libraries

Technical areas of primary interest to academic libraries are CD ROM, on-line services, e-mail and imaging. On-line services are proliferating, with most university campuses offering remote access to many library facilities. The World Wide Web has become a burgeoning source of multimedia on-line access to college and university resources. Imaging offers exciting opportunities for document storage and retrieval. Costs for such systems, even at the lower end, are still high, but are gradually becoming more affordable.

D
Commentary

As will be noted in the following chapter, *Information Services Market*, the K-12 courseware market is the second largest in the education sector. Many educators believe the content of this market provides the information technology versions of the experiences ~~which~~ form the basis ~~for our basic~~ learning skills and future intellectual development. As noted previously in this chapter, people are strongly in favor not only of the "three Rs" but in broader-based education that includes computer-based training which they view as crucial for this wired age that has emerged and continues to spread.

Computer literacy is already considered a basic, necessary skill in numerous school districts. In many colleges and universities, it has become virtually impossible to do homework or projects without a computer. The days of slide rules, typewriters and even calculators are all but gone.

Even though its ability to spend real dollars is small, American industry recognizes the value of the K-12 market. For years suppliers such as Apple and more recently IBM and Compaq have been underwriting education with the belief that students who grow up learning on a particular system will be committed to that brand through college and into professional life.

However, funding limits are still a major barrier to growth. Even when subsidized, the costs of IS solutions, in terms of K-12 budgets, are high. Regardless, INPUT believes the investment will be made. Anything else is unthinkable and highly impractical, since the result would be a labor force that lacks critical technological skills and would be less competitive in a world market ~~where~~ countries like Germany and Japan already educate their children more effectively than the U.S.

III

Information Services Market

This chapter discusses the expenditures for information services in the education marketplace. User expenditure forecasts are provided for the education industry by industry sector and product/service market sectors. Assumptions driving the forecasts are presented. Note that these forecasts do not include functional, general-purpose information services such as those used for human resources, accounting, or generic planning and analysis. The markets for these types of information services are presented in the *Information Services Cross-Industry Markets* report, rather than in the industry-specific reports.

Note that the numbers used in the exhibits are rounded. Precise values are used in the text and Appendix A, the *Forecast Database*.

Section A, *Overview*, notes the overall size and growth rate of the education market's expenditures for information services.

Section B, *Product/Service Market Sector Analysis*, segments the data into INPUT's seven standard product/service market categories.

Section C, *Industry Segment Analysis*, restructures the forecast in terms of the major market segments within the education industry. These segments are:

- K-12 Administrative
- K-12 Courseware
- Higher Education Administrative
- Higher Education ~~Academic~~ Courseware
- Academic Libraries

Section D, The Internet in Education, offers an assessment of the impact of the resource on the Education Market.

Section E, Conclusions and Recommendations, provides INPUT's analysis and recommendations for this industry.

A
Overview

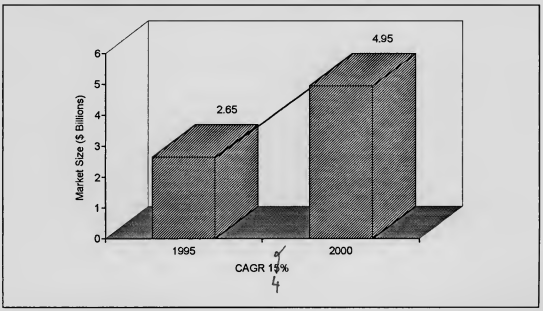
The academic education information services market includes software and services for K-12, colleges (including two-year vocational/technical schools), universities and academic libraries. There are also separate administrative and curriculum courseware markets.

The information services requirements are unique for each of the segments. As a result, most of the companies that provide information services to the academic education markets specifically address one of the three market subsectors—K-12, higher education or libraries. In addition, companies that produce academic courseware or administrative software usually represent two different vendor types.

In 1995, the academic education market will be just over $2.6 billion. The ~~academic education~~ market is expected to increase at a compound annual growth rate (CAGR) of 14%, from over $2.6 billion in 1995 to just under $5 billion in 2000, as shown in Exhibit III-1.

Exhibit III-1

Education Sector—Information Services Market, 1995-2000



Note: Values have been rounded.

Although the current five-year growth rate projection for the education market sector has increased from the 12% CAGR forecast in the 1994 report, two factors will continue to have an effect on the education sector: Enrollment and Budgets.

Enrollment

- The enrollment projected for elementary schools in prior years has now been adjusted by the National Center for Educational Statistics to reflect a 8% growth rate through the year 2000, while secondary school enrollment will increase by 12%. Because elementary schools provide the raw material for secondary schools, colleges and universities, enrollment at the senior institutions is now also projected to increase.

  More school-age children are attending elementary schools and continuing on to secondary levels. Despite decreases in the traditional college-age population, college and university enrollment reached 14.7 million in 1994, up from 14.6 million in 1993. In 1995, total college and university enrollment is expected to reach 14.9 million and grow to 15.5 million by 2000.

Budgets

- There is continuing budget sensitivity in all the academic education markets. This sensitivity is a considered response to changing patterns in student enrollments, expected cutbacks in federal grants for education, and reductions in the corporate tax base in many inner-city and rural environments.

  Stated another way, the budgetary concerns are a logical response to the recent prolonged economic slowdown. The ability of taxpayers to vote for (or against) increases in school funding will serve as a driving force for public school annual budget growth.

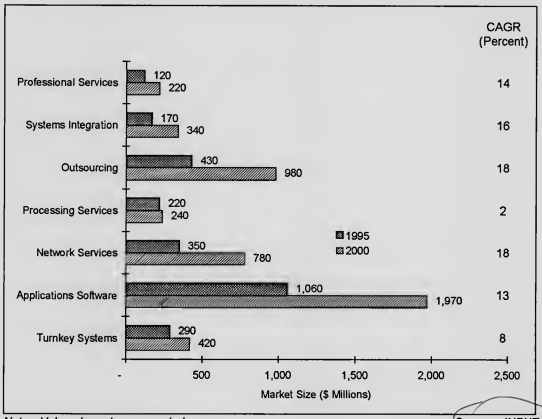
The Clinton Administration's enactment of the Goals 2000 program, though inherited from George Bush, has given the President a clear agenda and methodology by which to improve American public education. In spite of looming budget cuts as deficit-reduction negotiations continue, Goals 2000 appears to be headed for success, which may soften the budget anxieties noted previously. Goals 2000 has a grassroots focus, a crucial factor since local educators, with input from parents and students, are being encouraged to think in creative, forward-thinking ways. This is critical to U.S. students, who will become the business and government leaders of the next millennium.

B
Product/Service Market Sector Analysis

Forecasts by product/service market sector for user expenditures in the education sector are shown in Exhibit III-2. INPUT analyzes the vertical information services markets by seven such sectors, and the following sections discuss the growth projections for each of them.

Exhibit III-2

Education Sector Information Services Market by Product/Service Market Sector, 1995-2000



Note: Values have been rounded.

Source: INPUT

1. Processing Services

INPUT defines processing services for the educational market as transaction processing services. This can involve third-party processing of administrative applications, use of remote supercomputer facilities for research applications, and test scoring and statistical analysis by service bureau-type operations.

Expenditures for processing services in the education information services market will continue to grow at a 2% annual rate, increasing from more than $220 million in 1995 to more than $240 million in 2000. Processing services

growth in this market is flat due to the increasing use of personal computers and LANs for accounting and other administrative tasks that can now be done in-house. Local school district service bureau consortiums, which provide district-wide administrative applications, are not included in the processing services information services market figures because they are considered to serve a captive market.

2. Turnkey Systems

Turnkey systems applications integrate systems software, packaged or customized applications software, a CPU and related equipment and peripherals. User expenditures for turnkey systems will continue to show the second slowest growth rate, 8%, in the educational information services market over the next five years. From just over $290 million in 1995, the turnkey systems education market is expected to increase to just over $420 million in 2000.

The CD ROM market offers an exciting growth opportunity for turnkey systems vendors, particularly in the library environment. The popularity and effectiveness of the CD ROM as a training and applications tool is demonstrated by its growing use with business and home computers.

Turnkey systems also represents a substantial share of the K-12 administrative systems market, particularly because a school or an entire district will often seek a contractor to provide systems school personnel need. Unbundling of hardware and software and related services should also be considered as a competitive opportunity. A significant part of the market also includes test scoring systems delivered as a turnkey systems solution.

3. Application Software Products

The academic educational market for application software products is the largest market segment in the education industry and includes courseware, administrative and library software at the K-12 and higher education levels. The educational application software markets are expected to increase from roughly $1 billion in 1995 to nearly $2 billion in 2000, at a CAGR of 13%.

The academic educational software industry consists of a large number of companies, including independent academic courseware developers who specialize primarily in the K-12 markets, textbook suppliers and computer systems companies. Although there is major interest in increasing the amount of computer-assisted instruction in the K-12 classroom by users and vendors, there are a number of factors negatively impacting faster growth in this market. They are a continuing concern in this market.

- Ongoing K-12 budget constraints for hardware and software. These result in smaller profit margins for vendors, causing the more profitable commercial (business) market to appear more attractive.
- The need to upgrade classroom computer hardware from older equipment to new, more reliable and user-friendly devices.
- The need for more intensive teacher training (staff development) in computer literacy, use and teaching techniques.

Client/server or LAN-based applications offer an opportunity to blend traditional and computer-aided instruction smoothly in a structured environment. This centralized approach offers efficient equipment use and provides a supportive environment for teachers with limited computer skills.

Many educators consider the greatest opportunities for software products to be in multimedia. Multimedia is already in use in many schools today in the form of tools used for supplemental curriculum, reference and presentation development. Growth will continue in these core areas and expand to a broader range of courseware. The driving force will be the enthusiasm of those teachers who have already used multimedia and report that the experience generates greater enthusiasm for learning, stimulates superior levels of research and data gathering skills and results in improved student synthesis of information and depth of analysis.

At this time, the commercial courseware market for higher education will continue to remain relatively small due to the complexity of the courseware required and the expense of developing such programs. However, its growth rate is increasing. One reason for the improved growth is the greater use of standard applications software packages in many core undergraduate courses. For example, an English department might decide upon a standard word processing program, such as Word for Windows or WordPerfect. Another factor driving the higher growth rate is the low base from which the growth started. This began in the early 1980s, when desktop technology was used on a piecemeal, person-by-person basis in a given university or college department.

4. Outsourcing

Outsourcing involves the use of an outside vendor to perform part of an institution's computer operations. It can require that the vendor operate all the data processing facilities—which can be done either on site or off site—and/or perform application development, business integration along with telecommunications management services.

Outsourcing has become a fast-growing market in many industries, and the education sector is no exception. As shown in Exhibit III-2, in 1995, the education sector's outsourcing expenditures will be almost $430 million, and are expected to reach $980 million in 2000, with a CAGR of 18%. This growth rate ties outsourcing with network services as the fastest growing product/service sector in the education market.

As the complexity of computer applications expands in the K-12 and higher education markets, the need for sophisticated platform operations management and distributed/integrated applications development has been a stimulus to third-party outsourcing growth.

5. Systems Integration

The 1995 educational market for systems integration will total $165 million. It is expected to grow at a CAGR of 16% over the next five years and reach over $340 million in 2000. (See Exhibit III-2)

One reason for the high growth expectation for systems integration in the educational markets is the continuing need for providing intra- as well as inter-campus networking capabilities—tasks requiring the integration of new and existing technologies, including their respective applications and operating systems. At the K-12 level, there is also a growing need to interconnect local schools with district headquarters, even though network services is a better choice for this type of requirement.

In higher education, the use of outside systems integrators is limited. Contributing factors include the perceived high cost of long-term contracts, a desire to maintain integration control, and a slow movement toward distributed applications. This last factor is becoming less and less important as colleges and universities implement electronic classroom (ECR) and virtual teaching technologies.

6. Professional Services

The professional services product/service market sector is defined as a management consulting activity related to information systems, development of custom software as well as education and training. In 1995, the educational market for professional services will be almost $120 million. It will grow at a CAGR of 14%, reaching over $220 million in 2000.

The educational professional services market consists primarily of services provided at the higher education level in association with sales of administrative software and custom software development. In particular, as the software solutions become more complex, there is an increasing need for consulting, education and training support services. In addition, the ability

to customize standard solutions is increasing the acceptance of third-party-developed administrative software solutions in the higher education market. The demand for combining software and support services in the higher education market is expected to result in parallel growth for the professional services market and the stand-alone applications software market.

7. Network Services

INPUT defines the network information services market as consisting principally of electronic information services (EIS) and network applications, such as e-mail. Electronic information services are defined as database, news and video text services.

The educational market for network/electronic services is projected to grow at a 18% annual rate, from nearly $350 million in 1995 to over $780 million in 2000, with an expected strong demand for on-line database delivery and e-mail facilities.

The education market, particularly colleges and universities, is relying more and more on network services for a variety of needs. Most major post-secondary institutions have e-mail networks for students to access the Internet. Academics use online news and database services to do research and to confer with colleagues in other states and countries. Campuses with highly developed networks, such as the University of Illinois at Urbana-Champaign, are wired to allow students in dormitories to turn in homework, take exams and contact professors using a PC, some custom software, and local- or wide-area network access.

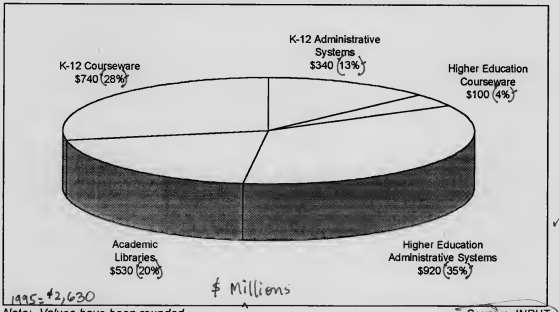
To date, however, e-mail remains the most common application requiring network services on campuses. Last year, INPUT reported that much of this activity is based on mainframe/terminal communications. This has changed as the price of a basic, modem-equipped PC has come down in the last year.

C
Industry Segment Analysis

The size of the education market for 1995, by principal application segment, is shown in Exhibit III-3.

Exhibit III-3

Education Market by Segment—1995

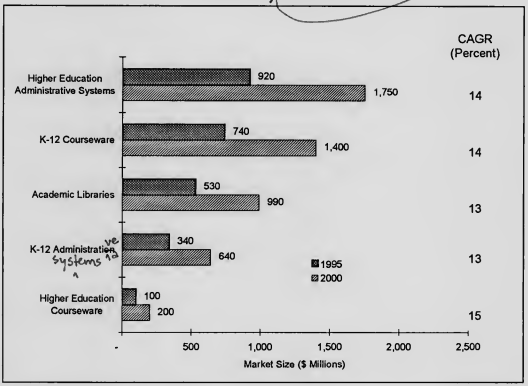


Note: Values have been rounded. *Source: INPUT*

The 1995 and 2000 information services market sizes and five-year growth rates for the segments of the education industry market are provided in Exhibit III-4.

Exhibit III-4

Education Sector Information Services Market by Segment 1995-2000



Note: Values have been rounded. *Source: INPUT*

- The courseware sectors will experience slightly faster growth in higher education (15%) than in K-12 (14%). This condition is driven by the growing acceptance and availability of commercial software for the higher education segment, and by the small base from which the growth started.

- Administrative systems expenditures at the higher education level are the largest market segment and are growing faster due to the greater availability of funds. In addition, there is a strong need to improve business efficiency and budget performance at the college and university level.

- The use of network services (on-line databases), e-mail and on-line interactivity, and the need to build inter-library networks fuel the academic library segment's growth. As use of the Internet grows, it will act as a growth stimulator for academic libraries as more information sources go on-line.

D
The Internet in Education

In his short story *The Fun They Had*, the late author Isaac Asimov presented a snapshot of a possible future in which two children marvel over a printed book and wonder about the fun their ancestors must have had reading its pages in a physical classroom. You see, the children in this future are educated exclusively by computers located in rooms in their own homes, right next to their bedrooms.

Will the Internet be a catalyst for change in this direction? INPUT believes this is still unclear. Educators, legislators, students and parents continue to argue about, and evaluate, the role of computer technology in education. In a sense, the use of technology in education is extremely unbalanced. Internet access is as easy and cheap as a local phone call and ~~and~~ a CompuServe account, yet the tools primary and secondary students need, computers with modems, are in short supply in the vast majority of U.S. public schools. Most school children are unable to use Internet resources until they get to college, unless they or their friends have computers at home. In Washington, D.C., for example, most students ~~have to~~ physically go ~~the~~ the Smithsonian or the Library of Congress for they have no access to the Web pages these institutions offer.

The Internet's value as an educational resource rests upon three issues. First, with the exceptions noted earlier in this report, most public schools do not currently have the resources to give students Internet access. Second, education is not the high priority it should be in the commercial scramble to establish a profitable on-line presense. Third, giving teenagers and pre-teenagers Internet access has created an exaggerated, but real, concern about protecting children from adult or sexually explicit materials and communications. Until these three issues are resolved, the Internet's role in education will remain problematic.

E
Conclusions and Recommendations

1. Conclusions

~~While~~ Although the state of U.S. education is not exactly grim, there is vast room for improvement. Public schools in particular still face the problems of budget cuts, political agendas and philosophical controversy. The first problem most affects how much, and what kind of, technology is available to most students.

But students are not the only concern. Many educators understand how the personal computer and educational software can improve the efficiency and

the content of teaching, but the traditional methods most teachers still use have proven difficult, and time-consuming, to adapt to technology use.

The Goals 2000 program is perhaps the best legislative means to addressing these and other fundamental problems in education. Goals 2000 presents a clearly defined set of plans for the effective implementation and use of computer technology in education. However, the government must prove it can improve its spotty record on education.

2. Recommendations

The private sector has the most to gain from better educated students. A well-educated student pool is perhaps the best resource this country could have to enhance global competitiveness and technological innovation.

Vendors who understand this and focus their marketing and product development towards acheiving this goal will be the vendors who succeed in the education market. In a sense, this continues to be a "labor of love" as opportunities in the education market can prove elusive, due largely to budget constraints, and relationships must be nurtured once established. The rewards for patience can prove to be great, furthering vendor success and innovation, and education in general.

Forecast Database

This appendix contains the forecast database for the period 1995-2000 and the 1995 MAP database reconciliation.

A
Forecast Database

Exhibit A-1 presents the detailed 1994-2000 forecast for the education sector.

MARKET SIZE BY EDUCATION PRODUCT/SERVICE CATEGORY 1991 - 2000

Exhibit A-1

Education ~~Sector~~—Market Size Forecast by Product/Service Market Sector, 1994-2000

Product/Service Markets	1993 ($M)	Growth 93-94 (%)	1994 ($)	1995 ($)	1996 ($)	1997 ($)	1998 ($)	1999 ($)	CAGR 94-99 (%)
~~Sector~~ Total	2,050	12	2,290	2,559	2,866	3,211	3,611	4,064	12
Professional Services	98	12	110	121	134	146	161	178	10
- IS Consulting	26	15	30	33	39	42	48	55	13
- Education & Training	15	13	17	19	21	23	25	27	10
- Software Development	57	11	63	69	74	81	88	96	9
Systems Integration	121	16	140	165	198	231	266	305	17
- Equipment	41	17	48	56	67	79	91	105	17
- Software Products	10	10	11	13	16	19	22	25	18
- Professional Services	68	15	78	93	111	129	148	170	17
- Other	2	50	3	3	4	4	5	5	11
Outsourcing	281	16	326	379	441	525	619	730	17
- Platform Operations	194	15	223	255	240	346	408	483	17
- Applications Operations	76	18	90	109	134	159	187	220	20
- Desktop Services	4	25	5	6	6	7	8	9	12
- Network Management	7	28	8	9	11	13	16	18	18
Processing Services	206		212	217	220	224	229	233	2
- Transaction Processing	206	3	212	217	220	224	229	233	2
Network Services	254	17	298	348	404	469	547	638	16
- Electronic Information Svcs	163	18	192	225	263	307	359	420	17
- Network Applications	91	16	106	123	141	162	188	218	16
Applications Software	828	12	927	1,034	1,154	1,282	1,430	1,595	11
- Mainframe	85	1	86	88	88	89	90	89	1
- Minicomputer	195	8	211	226	239	250	266	283	6
- Workstation/PC	548	15	630	720	827	943	1,074	1,223	14
Turnkey Systems	262	6	277	295	315	334	359	385	7
- Equipment	120	6	127	135	143	150	160	171	6
- Software Products	100	5	105	112	120	129	140	152	8
- Professional Services	42	7	45	48	52	55	59	62	7

B

Forecast Reconciliation

Exhibit A-2 presents the forecast reconciliation of the 1994 and 1995 forecasts for the education sector.

Exhibit A-2

Education Sector, 1995 MAP Database Reconciliation

Product/ Service Market	1993 Market 1993 Market (Forecast) ($M)	1993 Market 1994 Report (Actual) ($M)	1993 Market Variance From 1993 Forecast ($M)	1993 Market Variance From 1993 Forecast (%)	1998 Market 1998 Market (Forecast) ($M)	1998 Market 1994 Report (Forecast) ($M)	1998 Market Variance From 1993 Forecast ($M)	1998 Market Variance From 1993 Forecast (%)	93-98 CAGR per data '93 Rpt (%)	93-98 CAGR per data '94 Rpt (%)
Total	2,043	2,050	7	0	3,650	3,611	-39	-1	12	12
Professional Services	98	98	0	0	162	161	-1	-1	11	10
Systems Integration	121	121	0	0	269	266	-3	-1	17	17
Outsourcing	280	281	1	0	625	619	-6	-1	17	17
Processing Services	205	206	1	0	231	229	-2	-1	2	2
Network Services	253	254	1	0	553	547	-6	-1	17	17
Applications Software	825	828	3	0	1,447	1,430	-17	-1	12	12
Turnkey Systems	261	262	1	0	363	359	-4	-1	7	7

There were some notable differences between the 1994 projection for the 1994 market and the actual expenditures reported in the 1995 forecast. The maximum variance was $35 million in the total education market, or a 2% understatement of the total market in 1994. The variance is due to significant shifts in the professional services and outsourcing markets.

Professional services spending in 1994 was 9% below expectation, as the requirements for technical planning and implementation support grew less rapidly than anticipated. A factor in this variance is the delays resulting from conservative fiscal policies resulting from the prolonged economic downturn. Outsourcing was understated by 10% as a result of an increase in

outsourcing spending in order to control information systems costs and still provide the capacity and function needed to support both academic and administrative needs.

Variances in the projections for product/service markets for 1999 range from $133 million for application software to $5 million for processing services. In terms of percentage variance, all values rounded to a $289 million or 7% understatement of 1999 performance in the 1994 report. This overall variance is driven by a 14% variance in INPUT's forecast of the outsourcing market and an 8% difference in the applications software forecast. Applications software in particular will grow at 13% annually, remaining the largest market due to anticipated demand as computer-based instruction becomes more prevalent.

The only significant variance in the CAGRs reported in 1994 and 1995 is for professional services, which is forecast to grow 15% annually, versus the 10% reported in 1994. This is due to this market segment's $19 million forecast difference from the 1994 report. This, combined with the small size of the market, accounts for the CAGR difference.

EXHIBIT A-1

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5/22/95

EDUCATION

Market Size by Product/Service Categories, 1994-2000

($ Millions)

22-May-95

PRODUCT/SERVICE CATEGORIES	1994 ($)	Growth 94-95 (%)	1995 ($)	1996 ($)	1997 ($)	1998 ($)	1999 ($)	2000 ($)	CAGR 95-00 (%)
				13%	13%	14%	14%	14%	
INDUSTRY TOTAL	2325	13%	2626	2974	3365	3823	4353	4961	14%
				14%	15%	14%	13%	13%	
Professional Services	100	16%	116	132	152	174	197	223	14%
- IS Consulting	28	21%	34	40	47	56	65	76	17%
- Education & Training	17	18%	20	22	26	30	34	39	14%
- Software Development	55	13%	62	70	79	88	98	108	12%
				20%	17%	15%	15%	13%	
Systems Integration	138	20%	165	198	231	266	305	344	16%
- Equipment	46	22%	56	67	79	91	105	119	16%
- Software Products	11	18%	13	16	19	22	25	29	17%
- Professional Services	78	19%	93	111	129	148	170	190	15%
- Other	3	0%	3	4	4	5	5	6	15%
				19%	18%	18%	18%	18%	
Outsourcing	359	19%	427	507	598	705	832	980	18%
- Platform Operations	225	18%	265	311	360	416	479	550	16%
- Applications Operations	93	20%	112	134	161	192	228	269	19%
- Desktop Services	7	14%	8	10	12	15	20	26	27%
- Network Management	8	13%	9	11	13	16	20	26	24%
- Application Management	14	21%	17	20	24	29	35	42	20%
- Business Operations	12	33%	16	21	28	37	50	67	33%
				2%	2%	2%	1%	1%	
Processing Services	215	3%	221	226	231	235	238	241	2%
- Transaction Processing	215	3%	221	226	231	235	238	241	2%
				17%	17%	18%	18%	18%	
Network Services	297	17%	348	407	475	560	661	782	18%
- Electronic Information Svcs	191	18%	225	265	312	370	440	526	19%
- Network Applications	106	16%	123	142	163	190	221	256	16%
				13%	12%	13%	14%	14%	
Applications Software	940	12%	1057	1193	1339	1519	1728	1969	13%
- Mainframe	85	1%	86	88	88	89	89	89	1%
- Minicomputer	210	8%	226	240	251	267	284	300	6%
- Workstation/PC	645	16%	745	865	1000	1163	1355	1580	16%
				7%	9%	7%	8%	8%	
Turnkey Systems	276	6%	292	311	339	364	392	422	8%
- Equipment	125	6%	133	141	148	158	170	182	6%
- Software Products	105	5%	110	117	134	145	157	170	9%
- Professional Services	46	7%	49	53	57	61	65	70	7%

EXHIBIT A-2

5/22/95
5:12 PM

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EDUCATION

1995 MAP Data Base Reconciliation

($ Millions)

22-May-95

	1994 Market				1999 Market				94-99	94-99
	1994	1995	Variance From		1994	1995	Variance From		CAGR	CAGR
	Market	Report	1994 Forecast		Market	Report	1994 Forecast		per data	per data
	(Forecast)	(Actual)			(Forecast)	(Forecast)			'94 Rpt	'95 Rpt
DELIVERY MODES	($M)	($M)	($M)	(%)	($M)	($M)	($M)	(%)	(%)	(%)
Total	2290	2325	35	2%	4064	4353	289	7%	12%	13%
Professional Services	110	100	-10	-9%	178	197	19	11%	10%	15%
Systems Integration	140	138	-2	-1%	305	305	0	0%	17%	17%
Outsourcing	326	359	33	10%	730	832	102	14%	17%	18%
Processing Services	212	215	3	1%	233	238	5	2%	2%	2%
Network Services	298	297	-1	0%	638	661	23	4%	16%	17%
Applications Software	927	940	13	1%	1595	1728	133	8%	11%	13%
Turnkey Systems	277	276	-1	0%	385	392	7	2%	7%	7%

EXHIBIT A
(ADM450)

INPUT EDITING CHECKLIST

ck report type:

USA	WASH. D.C.	UK
☐ EDEDI	☐ FISSP	☐ CECSP
☑ MAMAP	☐ SISIP	☐ IEMAP
☐ UIISP	☐ SOSOP	☐ OEOSP
☐ YNGEN–NJ	☐ YVGEN	☐ SESIP
☐ YWGEN–CA	☐ XVGEN	☐ NENSP
☐ WNGEN–NJ		☐ XEGEN
☐ WMGEN–Reg		☐ YEGEN
☐ YRGEN–Reg		
	JAPAN—	☐ JJGEN
	OTHER—	☐ _____

Project Code MVE5

1st Draft Editor Anna Reynolds Trabucco

2nd/Final Draft Editor _____

Final Corrections _____

Executive Overview _____

First Draft Editing

- ☐ Check TOC[1] outline against text
- ☐ Check LOE[1] against exhibit titles
- ☐ Check headers and footers[2]
  - Correct name on top
  - ✓ Correct code on bottom
  - ✓ Correct © year—No copyright on custom reports
- ☑ Proofread and edit text—**always check against author draft**
  - Correct grammar, diction, and punctuation problems
  - Check for consistency in company/product names, etc.
  - Exhibits must have exhibit references in text
  - Textual description of exhibit must match exhibit contents
- ☑ Proofread and edit exhibits—**always check against author draft**
  - Proofread and edit text and title—title must accurately describe exhibit content
  - Similar exhibits must have similar wording and punctuation
  - Check monetary units and labeling carefully—be sure labels match those in author's draft
  - Similar exhibits must have same numerical scale[2]
  - Check for *x*- and *y*-axis labels[2]
  - Changes to the numbers in exhibits must agree with text.
  - Changes to exhibit names must agree with LOE[1].

- ☑ Mark formatting problems (problems with bold or italic words, font size irregularities, chapter heading and subheading problems, etc.)
- ☑ Discuss all queries with the author, either in person or over the phone, and make the necessary corrections to the text.
  - If there is no abstract in the report, ask author to submit one ASAP (possible exceptions: U.S. MAP vertical-industry reports, some CSP reports, some custom reports). Author's employee number and program year go above project code.
  - No unanswered questions should remain when you submit report to graphics. If the author cannot answer a query within a *reasonable* time, submit report to graphics with a note explaining that the author will respond shortly.
  - If any portion of a report is missing, such as an exhibit or a profile, procure missing item from the author before the report goes back to graphics. When the author specifics appendix(es) are *standard*, be sure that the author has specified the exact appendix . "Standard Appendix A" is insufficient. "Standard Appendix A from report MATKY" is exact.
- ☑ If the report has recurring errors, such as an incorrectly spelled company name, request that the graphics department do a global change. On a query slip, indicate the incorrect word and how to change it, and place the slip on the blue sheet.
- ☑ Submit report/disk to graphics.[3]

First-Draft Editing On-Line

Use same checklist as above; make corrections directly to the document on disk. Flag, highlight, or note questions on the hard copy and discuss with the author. Run spell-checker when finished.[3]

- ☐ Return edited PC disk to program manager (after graphics has a copy to process)

1. When INPUT implements Table of Contents and List of Exhibits automated procedures, omit this step until final.
2. Not in on-line editing.
3. If you edit on-line *before* senior QC, print a clean hard copy—submit hard copy to senior QC.

Second/Final Draft

- ☐ Check implementation of first-draft text and exhibit changes.
- ☐ Check headers and footers (if not done in first draft)
  - Correct name on top
  - Correct code on bottom
  - Correct © year—No copyright on custom reports
- ☐ Do a light rereading of the text to catch errors previously overlooked.
- ☐ Proofread chapter divider pages.
- ☐ Make sure that exhibits appear appropriately in-text.
- ☐ Make sure exhibit numbers in text are sequential by chapter (e.g., II-1, II-2, etc.).
- ☐ Recheck that TOC and LOE names match report/exhibit headings[1]—change TOC or LOE if there is a discrepancy—not the report/exhibit heading.
- ☐ Check that page numbers in TOC and LOE correspond exactly to report pagination.
- ☐ Proofread title page—current month and year at top of page; address at bottom for office where report originated (CA; VA; U.K. reports use all 3 European office addresses); no ©.
- ☐ Proof copyright page—no copyright page in custom reports
  - Check report title, program name, and program acronym (not internal program code)—no acronym for U.K. reports.
  - U.K. reports say "Researched in the U.K." etc. if published in the U.S.
  - Check report code, author's employee number, program year (year written for) and copyright year (when actually published).
  - Check header and footer.
- ☐ Make sure all elements of the report are present
  - Title page
  - Copyright page
  - Abstract (only a few reports don't require an abstract). Back of abstract is blank
  - TOC/LOE
  - Chapter dividers
  - All chapters
  - Appendix(es)
- ☐ Check pagination throughout the report. Each chapter starts with page 1 and ends on an even numbered page. The numbers begin with the Roman numeral of the chapter (i.e., page 3 of chapter 4 is IV-3).
- ☐ If you mark few corrections, flag these pages with query slips for the graphics staff.

Final Corrections

- ☐ Check implementation of all second-draft corrections.
- ☐ Use query slips to flag final changes. Flags are very important. Graphics staff will assume there are no additional corrections to be made if no pages are flagged.

Executive Overview

Most reports have an *Executive Overview* (chapter 2 of the report) printed as a separate document. The *Executive Overview* consists of the following elements:

- Cover
- "To our clients" page (inside cover)
- Abstract (from the report)
- Overview Contents
- Executive Overview chapter from the report (usually chapter 2)
- TOC (from the report)
- LOE (from the report)
- Program description
- About INPUT

What to proofread:

- ☐ Cover page—title.
- ☐ "To our clients" page—completely
  - U.K. reports read "Programme—Europe"
- ■ Abstract is pulled directly from the report
- ☐ Overview Contents—completely
  - U.K. overviews will read "Programme Description"
- ■ Report Table of Contents and Exhibit list are pulled directly from the report.
- ☐ Program description—page numbers (consecutive after list of Exhibits).
- ☐ About INPUT[4]—U.S. or U.K. version as appropriate

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[4]*About INPUT* is a one-page description of INPUT and a list of INPUT offices. It is used in publications as follows;

- Hard-Velobound: inside front cover—bindery
- Soft-Velobound: back page
- Softbound/Executive Overview: back cover
- Binders: back of pre-printed title page

Introduction

A
Purpose

The purpose of this forecast report is to identify key changes in the market for information services in the education sector, and to provide the 1995 INPUT forecast for this market sector.

Sector Definition—The education information services market includes SIC codes 821, 822 and 823 and is divided into three principal applications subsegments:

- Administrative applications
- Academic research/courseware applications
- Library applications

Administrative applications include education-specific administrative applications and networking of intra- and intercampus IS resources.

Academic research/courseware applications contain software for curriculum instruction and computer literacy at all academic levels, including vocational/technical schools. It also includes teacher, professor or department-specific research projects.

Library applications comprise catalog maintenance and information retrieval, circulation control, loans and reservations, acquisitions, periodical control, indexing, and text search and retrieval. Also added are on-line library computer services, incorporating search and cataloging services.

B
Organization

The balance of this report is organized as follows:

- Chapter II—"Trends, Events and Issues," discusses the effects of educational reform, technology and budget concerns at all institutional levels. This chapter also looks at other issues, activities and changes that can have an impact on the current and future use of information services in the education marketplace.

- Chapter III—"Information Services Market," presents an analysis of the expenditures for information services by product/service market and submarket for the U.S. education market sector. This chapter also includes an evaluation of the impact of the Internet on education, and provides conclusions and recommendations regarding this market.

- Appendix A—which contains the "Forecast Database," presents a detailed forecast of user expenditures by information services product/service market and submarket sector, for the education vertical market. A reconciliation to the previous forecast is also provided.

C
Methodology

Ongoing Research—Much of the data upon which this report is based has been gathered during late 1994 and the first half of 1995 as part of INPUT's ongoing market analysis program. Trends, market sizes and growth rates are based on INPUT research and in-depth interviews with users in the education marketplace and the information services vendors serving that market. Interviewees for the research portion of this report were selected from this database of contacts.

Resources—INPUT's corporate library located in Mountain View, California provided extensive research for this report. The resources in this library include on-line periodical databases, subscriptions to a broad range of computer and general business periodicals, continually updated files on more than 3,000 information services vendors, and the most recent U.S. Department of Commerce publications on economic and industry statistics.

Forecast Estimates—Vendors, in response to interviews or questionnaires, may be unwilling to provide detailed revenue breakouts by product/service market segment or industry. Also, vendors often use different industrial categories and industry segments, or view their services as falling into different product/service market segments from those used by INPUT. Thus, INPUT must estimate revenue for these categories. For this reason, the product/service market forecasts and industry segment forecasts should be viewed as indicators of general patterns and trends rather than specific, detailed estimates for individual years.

D
Related Reports

In addition to this market-specific report, the reader may also be interested in other INPUT-related reports, which address specific product/service markets and the U.S. and Worldwide markets for information services. Such reports would include the following INPUT publications:

- *U.S. Processing Services Market, 1995-2000*
- *U.S. Professional Services Market, 1995-2000*
- *U.S. Network Services Market, 1995-2000*
- *U.S. Applications ~~Software/Turnkey Systems~~ Solutions Market, 1995-2000*
- *U.S. Systems Integration and Outsourcing Markets, 1995-2000*

QC NOTE: Above reports likely have more up-to-date titles - DR

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II

Trends, Events and Issues

A
Background

As noted in the 1994 Education report, this market is not so much a defacto industry as much as it is an institution. But it is an institution that is constantly under intense scrutiny, always judged on the basis of overall quality, content, equality and value.

In the United States, the right to an education is fundamental and guaranteed by law. Beyond this, the processes and methods of education are often hazily defined and therefore prey to interpretation and controversy. The United States Constitution, for example, frames a government that is separate from the church. Yet in education, a government service, the teaching of the theories of evolution and creationism, and the suitability of school prayer (or moments of silence), are heatedly debated topics among religious groups, parents and educators.

The theological content of education is not the only ongoing controversy. Ethnic leaders, educators and parents continue to debate how the history taught in schools should be revised to more accurately relate the historical contributions of African, Asian and Native Americans to our nation. In English and literature classes, standard source materials, like Twain's *Huckleberry Finn* and Shakespeare's plays, have become controversial for apparent racial language and violent content.

However, within this context, the needs of students continue to drive both the philosophical and technological requirements of modern education. There are a number of trends, events and issues which will influence this market in 1995. Many of these will continue to shape the education sector through the end of the

century. The balance of Chapter II discusses and analyzes these market influences.

B
Overview

In contrast to most other industry sectors about which INPUT prepares information services market forecasts, the education market is relatively stable. There is a predictable flow of students (in essence, the market's "customers"). Most of the sector's financials, sources and expenditures of funds, are accessible in public records. And its environment and activities tend to be highly structured and slow to change. As a result, the overall assessments of this marketplace contained in INPUT's 1993 and 1994 reports on the education sector are still valid. Significant changes that affect the information services market are noted in this forecast update and discussed in this and the following chapter.

C
Trends and Events

1. Education Industry Growth

Fundamentally, education is a growth industry. This section examines the numbers which reflect that growth, emphasizing changes in enrollment, the teacher population and expenditures for education and academic libraries.

Enrollment—According to the Department of Education (DOE), the number of students enrolled in U.S. schools and colleges in late 1994 was about 64.5 million, an increase of less than 1% over the 63.9 million in 1993. This is expected to grow to 65.6 million by the end of 1995. Between 1995 and 2000, the total student population in U.S. schools is projected to grow to 69.8 million, an increase of 4.2 million or 6.4%. In grades K-12, the most significant growth will be in the public school system, which in 1995 will represent 88% of this segment. This is will remain constant through 2000. Another agency, the National Center for Education Statistics (NCES), projects public school enrollment will reach 32.3 million by the end of 1995, growing to 34.4 million by 2000. From the fall of 1994 to the fall of 2000, NCES forecasts a growth of 8% in public elementary school enrollment. The agency forecasts a 12% rise in public secondary school enrollment for the same period.

Enrollment in higher education, colleges and universities, rose to 14.7 million in 1994, a 0.7% increase over 1993. In 1995, enrollments are expected to narrowly miss 15 million. By 2000, college and university enrollments will reach roughly 15.5 million, a growth rate of 3.4%. Some economists expect the average annual cost for college tuition to decline, by as much as 4%, due to this projected increase in the higher education student pool.

Teacher Population—According to DOE figures, for all education segments the teaching population stood at nearly 3.8 million in 1994, an increase of 1.5% over 1993. This is expected to grow to roughly 3.9 million by the end of 1995, a further increase of 2.3%. By 2000, the number of teachers will rise 5.4% to reach approximately 4.1 million. The teaching population in public schools is still much larger than in private schools. In 1994, for example, 83% of all teachers worked in public schools. DOE projections show this percentage will remain constant until 2000.

Although never the wealthiest of professions, the value of teachers' salaries rose roughly 13% between the 1983-1984 school year and the 1993-1994 school year. Although much of this increase occurred in the 1980s, the average teacher's salary in 1995 is expected to be about $36,000 per year.

Expenditures—Expenditures for all education levels, kindergarten through post-graduate, reached $484 billion in 1994, representing 7.6% of the U.S. GDP. Of this total amount, the K-12 segment spent nearly 60%, with the remainder spent by colleges and universities. The $484 billion spent in 1994 represents a 4.6% increase over the $463 billion spent in 1993. However, 1993 expenditures represented slightly more of the GDP, 7.7%. Unfortunately, INPUT expects educational spending to remain at the 7.6% level, or decrease slightly, during the first 24 months of the forecast period. This is due to a flurry of budget-cutting activity in the Federal Government in the last year as the Clinton administration has fought with the House and Senate over ways to reduce the federal deficit. Public school programs for extracurricular activities, such as sports teams, have already been affected in states like California and Texas.

Academic Libraries—Expenditures for libraries fell from 3.3% of college budgets in the mid-1980s to about 3.0% in the early 1990s. Currently, they are stabilizing at about 3% and should remain at that level through the balance of this decade. Expenditures at the

K-12 level are less, due to the narrower range of topics and research media (e.g. on-line computer systems).

2. External Trends and Events

As they have been for the last few years, the primary external trends affecting education programs and expenditures continue to be:

- Budget restraints resulting from decreased tax revenues and the slow pace of recovery after the recent economic slowdown
- Diversity in the student population, causing many and varying educational requirements
- A wide variance in school facilities, based on the level of local, district or county support
- Curriculum reform

Each of these trends is discussed in further detail below.

a. Budgets

~~As INPUT reported in the 1994 Education report,~~ budgets for public schools, colleges and universities remain a priority concern. Funding for these institutions still comes primarily from taxes. However, the *26th Annual Phi Delta Kappa/Gallup Poll of the Public's Attitudes Towards the Public Schools*, published in late 1994, showed that many people remain unhappy with the way they are taxed to support schools. According to that poll, 53% of the public views current tax policies for funding education as unfair.

The poll noted that people are primarily unhappy with the inequalities in school funding because of the features most states have in their tax system. This often results in tax revolts, such as the one in Michigan in 1993 where the local property tax was abandoned due to controversy over its ability to fund public schools. In most states, property taxes are the primary funding source for schools. However, protests from people with no children, or those whose children are not in public schools, is causing a shift away from property-based taxation in favor of sales tax increases to fairly distribute funding.

States are under increased pressure to produce funds for public schools, due largely to the current financial climate on Capitol Hill. Reducing the federal deficit is a top priority for Democrats and Republicans alike, particularly since the latter party gained majority control after the November, 1994 elections. Nevertheless, President Clinton continues to struggle with both parties over the best way to cut government spending. One proposed strategy is to turn many federal responsibilities over to state governments. This would include more funding for public education, which would put more pressure on state and county governments to raise school taxes.

However, education is still a high priority for the Clinton Administration. The President's Goals 2000: Educate America Act was signed into law in March, 1994. The act is designed to provide up to $400 million per year to give education grants to states and school districts so they may adopt reforms consistent with the act's purpose of creating national education standards. This would form the heart of an overall public education framework to increase academic excellence by more strongly connecting curriculum, instruction, assessment and standards. Title III of Goals 2000 provides funds for each state's efforts to improve its own academic standards, with the proviso that more funding will be available based on the assessed improvements in education, notably student achievement and instruction quality.

Another component of Goals 2000, Title II, has unfortunately been virtually shut down. Title II created the National Educational Standards and Improvement Council (NESIC), a federally funded body whose purpose is to establish national content and performance standards in academic subjects and evaluate those devised by state governments. The NESIC is designed to lead by example, giving states the primary creative responsibility for improving public education. Although this Goals 2000 component was supported by many Republicans in 1994, the majority they achieved after the November elections expressed little interest in funding an agency for national education standards. Many analysts and government officials view the NESIC as a dead entity.

Overall, progress has been slow for Goals 2000, yet the act is having a positive impact. INPUT believes Goals 2000, particularly the Title III component, is a key means of coordinating standards and funding to improve education through the end of the decade.

b. Diversity

Diversity takes many forms in the educational environment. It includes those with different learning capabilities, language skills, economic backgrounds, ethnic origins and an increasing number of physically handicapped individuals who can be a part of the educational process. Virtually all educational systems now recognize diversity as a normal component of the educational process, and most teachers are skilled in dealing with it in the classroom.

The personal computer has proven to be a superb tool for coping with a heterogeneous group of students with varying educational needs. With a PC and any of the numerous sophisticated education software packages available, a teacher can tailor instruction for at the appropriate level for a given student. This establishes instructional consistency in the classroom, without overburdening a teacher who may well be overtaxed already.

So, although diversity is a challenge, hardware and software technologies are helping to remove it as a major educational stumbling block. The unfortunate reality of budget constraints remains, however, so many school systems must rely on older technology or solicit donations due to the cost of PC systems.

c. Variations in School Facilities

There are unfortunate inequities throughout the U.S. public education system, and they are nowhere more apparent than in the wide variety of facilities schools use on a daily basis. For example, a middle school in a working class section of the Bronx is less likely to have the kind of equipment and materials available to a comparable school in Beverly Hills. This is particularly true when the equipment in question is computers and related software and hardware. Yet one fundamental problem most public schools, colleges and universities share is the daunting expense of wiring existing classrooms with the electricity and telecommunications lines necessary for each student to have a computer.

The less costly alternative to bringing computers to the students is to bring the students to the computers. More and more public schools are doing this by creating and equipping special computer rooms, commonly called learning centers or computer laboratories, where students can go during school to use computers

loaded with the courseware appropriate to their work needs. In fact, many educators, particularly in primary and secondary schools, prefer this since they often see computers as a distraction from traditional teaching methods. In more advanced school computing environments, students are able to turn in homework to their teacher ~~electronically~~, using learning center PCs on a (LAN) based, client/server system.

LANs are not the only means of connecting school computers. The use of on-line network access is gaining credibility as a means for one school or an entire district to educate and administrate over the Internet. In Naples, Florida, for example, students and teachers use the Florida Information Resource Network (FIRN) to conduct interactive educational exercises with students in other Florida schools and in other countries. FIRN users have free access to electronic mail which allows students and teachers to interact on such things as professional development and student projects. Students can also do projects with counterparts in other countries, such as England, with similar systems in use.

Colleges and universities tend to much better equipped, technologically speaking, because of the typical demands of their curricula. For schools at all levels, however, the power and telephone lines we take for granted in business are absolute essentials. Without these resources, the value of the computer in the school, or classroom, is greatly diminished.

d. Curriculum Reform

According to the Phi Delta Kappa/Gallup poll referenced previously, the U.S. public does not feel that schools emphasize the so-called three Rs of reading, writing and arithmetic, along with science and history. Yet the poll indicates the public also wants a broader curriculum, one that places high emphasis on foreign language, music and art. Computer training and business education are also subjects parents want their kids to learn.

An argument has been added to curriculum discussions over whether subjects should be taught from a monoculturistic or multiculturistic point-of-view ~~has been added~~. Some parents and religious groups have protested the "tendency to abandon the melting-pot metaphor in favor of 'tossed salad'," according to one educator. This "tossed salad" approach is controversial because it emphasizes each ethnic group's cultural traditions rather than the

common traditions Americans share. According to the Kappan/Gallup poll, 75% of the public favors the promotion of both common and diverse traditions, yet this aspect of curriculum reform remains a heated topic.

3. Information Services Trends in Education

Information services activities in education tend to fall into three broad categories—academic courseware, administrative applications (for K-12 and higher education) and expanded on-line and CD ROM services for academic libraries. Each area is briefly considered in the following paragraphs. These overviews are consistent with INPUT's 1994 report.

a. Academic Courseware

There has been steady progress in the acceptance and quality of computer-aided instruction (CAI) in K-12, where many now regard computer literacy as a fundamental skill. In fact, the U.S. Department of Education estimated that by the fall of 1993, 68.9% of all U.S. K-8 students used microcomputers. The figure for grades 9-12 was over 10% lower at 58.2% Higher education has been slower to embrace commercial courseware (due to an ingrained belief that university instruction is somehow unique), but there too, acceptance of CAI is growing. Between 1989 and 1993, student use of computers in the first through fourth year of college rose from 39.2% to 55.2%. The future for such courseware, however, is generally believed to lie with client/server systems (e.g., IIS or ILS), and for most schools, client/server and the microcomputer (PCs, Macintosh) will be the vehicles for implementation. Multimedia will also offer the opportunity for integrating educational modules to stimulate all the senses and improve and enhance the learning process.

b. Administrative Applications

Although academia is not generally regarded as a business environment, the fact is the education process must run with balanced budgets and proper accounting for resources and student achievement. There is an expanding family of K-12 administrative applications designed to improve the management and accounting process and automate record-keeping, particularly those incorporating Information At Your Fingertips (IAYF) technology. Most of these applications are microcomputer-based. In higher

education, the major activity is the expansion of local (campus) and national networks to permit effective resource sharing and improved instructor productivity. Most institutions are also exploring the benefits of multimedia instruction. The primary concern is cost, and such systems tend to be as effective as their weakest component.

c. Academic Libraries

Technical areas of primary interest to academic libraries are CD ROM, on-line services, e-mail and imaging. On-line services are proliferating, with most university campuses offering remote access to many library facilities. The World Wide Web is has become a burgeoning source multimedia on-line access to college and university resources. Imaging offers exciting opportunities for document storage and retrieval. Costs for such systems, even at the lower end, are still high, but are gradually becoming more affordable.

D
Commentary

As will be noted in the following chapter, *Information Services Market*, the K-12 Courseware market is the second largest in the education sector. Many educators believe the content of this market provide the information technology versions of the experiences which form the bases for our basic learning skills and ~~our~~ future intellectual development. As noted previously in this chapter, people are strongly in favor not only of the "three Rs", but in broader-based education that includes computer-based training which they view as crucial for this wired age that has emerged and continues to spread.

Computer literacy is already considered a basic, necessary skill in numerous school districts. In many colleges and universities, it has become virtually impossible to do homework or projects without a computer. The days of slide rules, typewriters and even calculators are all but gone.

Even though its ability to spend real dollars is small, American industry recognizes the value of the K-12 market. For years suppliers such as Apple, and more recently IBM and Compaq, have been underwriting education with the belief that students who grow up learning on ~~your company's~~ particular system, ~~they~~ will be

committed to ~~your~~ that brand throughout college and into professional life.

However, funding limits are still a major barrier to growth. Even when subsidized, the costs of IS solutions, in terms of K-12 budgets, are high. Regardless, INPUT believes the investment will be made. Anything else is unthinkable and highly impractical, since the result would be a labor force that lacks critical technological skills and would be ~~at a further~~ less competitive in a world market where countries like Germany and Japan already educate their children more effectively than the U.S.

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III

Information Services Market

This chapter discusses the expenditures for information services in the education marketplace. User expenditure forecasts are provided for the education industry ~~by industry sector and~~ product/service market sectors. Assumptions driving the forecasts are presented. Note that these forecasts do not include functional, general-purpose information services such as those used for human resources, accounting or generic planning and analysis. The markets for these types of information services are presented in the *Information Services Cross-Industry Markets* ~~1995-2000~~ report rather than in the industry-specific reports.

Note that the numbers used in the exhibits are rounded. Precise values are used in the text and Appendix A, the *Forecast Database.*

Section A, *Overview,* notes the overall size and growth rate of the education market's expenditures for information services.

Section B, *Product/Service Market Sector Analysis,* segments the data into INPUT's seven standard product/service market categories.

Section C, *Industry Segment Analysis,* restructures the forecast in terms of the major market segments within the education industry. These segments are:

- K-12 Administrative
- K-12 Courseware
- Higher Education Administrative
- Higher Education Academic/Courseware
- Academic Libraries

A
Overview

The academic education information services market includes software and services for K-12, colleges (including two-year vocational/technical schools), universities and academic libraries. There are also separate administrative and curriculum courseware markets.

The information services requirements are unique for each of the segments. As a result, most of the companies that provide information services to the academic education markets specifically address one of the three market subsectors—K-12, higher education or libraries. In addition, companies that produce academic courseware or administrative software usually represent two different vendor types.

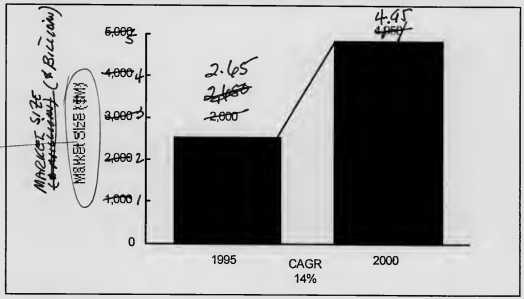
In 1995, the academic education market ~~is expected~~ will to be just over $2.6 billion, ~~or approximately X.X% of the $XXX billion total information services market forecast for this year~~. The academic education market is ~~still~~ expected to increase at a compound annual growth rate (CAGR) of 14%, from over $2.6 billion in 1995 to just under $5 billion in 2000, as shown in Exhibit III-1.

SECTION D, THE INTERNET IN EDUCATION, OFFERS AN ASSESSMENT OF THE IMPACT OF THIS RESOURCE ON THE EDUCATION MARKET.

SECTION E, CONCLUSIONS AND RECOMMENDATIONS, PROVIDES INPUT'S ANALYSIS AND RECOMMENDATIONS FOR THIS INDUSTRY.

Exhibit III-1

Education Sector—Information Services Market, 1995-2000



Note: Values have been rounded.

NOTE: THESE BARS HAVE BEEN ALTERED TO REFLECT NEW VALUES

Although the current five-year growth rate projection for the education market sector has increased from the 12% CAGR forecast in the 1994 report, two factors will continue to have an effect on the education sector:

- **ENROLLMENT—**
  - The enrollment projected for elementary schools in prior years has now been adjusted by the National Center for Educational Statistics to reflect a 8% growth rate through the year 2000, while secondary school enrollment will increase by 12%. ~~These figures in 1994 were 10% and 16% respectively.~~ Because elementary schools provide the raw material for secondary schools, colleges and universities, enrollment at the senior institutions is now also projected to increase.
  - More school age children are attending elementary schools and ~~more are~~ continuing on to secondary levels. Despite decreases in the traditional college-age population, college and university enrollment reached 14.7 million in 1994, up from 14.6 million in 1993. In 1995, total college and university enrollment is expected to reach 14.9 million and grow to 15.5 million by 2000.

- There is continuing budget sensitivity in all the academic education markets. This sensitivity is a considered response to changing patterns in student enrollments, expected cutbacks in federal grants for education, and reductions in the corporate tax base in many inner-city and rural environments.

  Stated another way, the budgetary concerns are a logical response to the recent prolonged economic slowdown. The ability of taxpayers to vote for (or against) increases in school funding will serve as a driving force for public school annual budget growth.

The Clinton Administration's enactment of the Goals 2000 program, though inherited from George Bush, has given the President a clear agenda and methodology to improve American public education. In spite of looming budget cuts as deficit-reduction negotiations continue, Goals 2000 appears headed for success, which may soften the budget anxieties noted previously. Goals 2000 has a grassroots focus, a crucial factor since local educators, with input from parents and students, are being encouraged to think in creative, forward-thinking ways. This is critical to U.S. students, who will become the business and government leaders ~~who must~~ that will effectively take us into the next millennium.

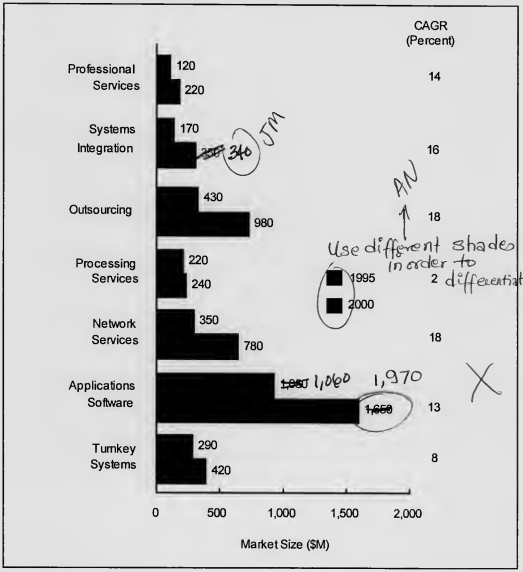
B

Product/Service Market Sector Analysis

Forecasts by product/service market sector for user expenditures in the education sector are shown in Exhibit III-2. INPUT analyzes the vertical information services markets by seven such sectors, and the next sections discuss the growth projections for each of them.

Exhibit III-2

Education Sector
Information Services Market by
Product/Service Market Sector, 1995-2000



Note: Values have been rounded.

NOTE: THESE BARS HAVE NOT BEEN ALTERED TO REFLECT NEW VALUES

1. Processing Services

INPUT defines processing services for the educational market as transaction processing services. This can involve third-party processing of administrative applications, use of remote supercomputer facilities for research applications, and test scoring and statistical analysis by service bureau-type operations.

Expenditures for processing services in the education information services market will continue to grow at a 2% annual rate, increasing from more than $220 million in 1995 to more than $240 million in 2000. Processing services growth in this market is flat due to the increasing use of personal computers and LANs for accounting and other administrative tasks that can now be done in-house. Local school district service bureau consortiums, which provide district-wide administrative applications, are not included in the processing services information services market figures because they are considered to serve a captive market.

2. Turnkey Systems

Turnkey systems applications integrate systems software, packaged or customized applications software, a CPU and related equipment and peripherals. User expenditures for turnkey systems will continue to show the second slowest growth rate, 8%, in the educational information services market over the next five years. From just over $290 million in 1995, the turnkey systems education market is expected to increase to just over $420 million in 1999.

The CD ROM market offers an exciting growth opportunity for turnkey systems vendors, particularly in the library environment. The popularity and effectiveness of the CD ROM as a training and applications tool is demonstrated by its growing use with business and home computers.

Turnkey systems also represents a substantial share of the K-12 administrative systems market, particularly because a school or an entire district will often seek a contractor to provide systems school personnel need. Unbundling of hardware and software and related services should also be considered as a competitive opportunity. A significant part of the market also includes test scoring systems delivered as a turnkey systems solution.

3. Application Software Products

The academic educational market for application software products is the largest market segment in the education industry and includes courseware, administrative and library software at the K-12 and higher education levels. The educational application software markets are expected to increase from roughly $1 billion in 1995 to nearly $2 billion in 2000, at a CAGR of 13%.

The academic educational software industry consists of a large number of companies, including independent academic courseware developers who specialize primarily in the K-12 markets, textbook suppliers and computer systems companies. Although there is major interest in increasing the amount of computer-assisted instruction in the K-12 classrooms by users and vendors, there are a number of factors negatively impacting faster growth in this market. They are ~~consistent with the 1994 report~~. A CONTINUING CONCERN IN THIS MARKET.

- Ongoing K-12 budget constraints for hardware and software. These result in smaller profit margins for vendors, causing the more profitable commercial (business) market to appear more attractive.
- The need to upgrade classroom computer hardware from older equipment to new, more reliable and user-friendly devices
- The need for more intensive teacher training (staff development) in computer literacy, use and teaching techniques

Client/server or LAN-based applications offer an opportunity to blend traditional and computer-aided instruction smoothly in a structured environment. This centralized approach offers efficient equipment use and provides a supportive environment for teachers with limited computer skills.

Many educators consider the greatest opportunities for software products to be in multimedia. Multimedia is already in use in many schools today in the form of tools used for supplemental curriculum, reference and presentation development. Growth will continue in these core areas and expand to a broader range of courseware. The driving force will be the enthusiasm of those teachers who have already used multimedia, and report that the experience generates greater enthusiasm for learning, stimulates superior levels of research and data gathering skills and results in improved student synthesis of information and depth of analysis.

At this time, the commercial courseware market for higher education will continue to remain relatively small due to the complexity of the courseware required and the expense of developing such programs. However, its growth rate is increasing. One reason for the improved growth is the greater use of standard application software packages in many core undergraduate courses. For example, an English department might decide upon a standard

word processing program, such as Word for Windows or WordPerfect. Another factor driving the higher growth rate is the low base from which the growth started. This began in the early 1980s, when desktop technology was used on a piecemeal, person-by-person basis in a given university or college department.

4. Outsourcing

Outsourcing involves the use of an outside vendor to perform part of an institution's computer operations. It can require that the vendor operate all the data processing facilities—which can be done either on-site or off-site— and/or perform application development, business integration along with telecommunications management services.

Outsourcing has become a fast-growing market in many industries, and the education sector is no exception. As shown in Exhibit III-2, in 1995, the education sector's outsourcing expenditures will be almost $430 million, and are expected to reach $980 million in 2000, with a CAGR of 18%. This growth rate ties outsourcing with network services as the fastest growing product/service sector in the education market.

As the complexity of computer applications expands in the K-12 and higher education markets, the need for sophisticated platform operations management and distributed/integrated applications development has been a stimulus to third-party outsourcing growth.

5. Systems Integration

The 1994 educational market for systems integration will total $165 million. It is expected to grow at a CAGR of 16% over the next five years and reach over $340 million in 1999. (See Exhibit III-2).

One reason for the high growth expectation for systems integration in the educational markets is the continuing need for providing intra- as well as inter-campus networking capabilities—tasks requiring the integration of new and existing technologies, including their respective applications and operating systems. At the K-12 level, there is also a growing need to interconnect local schools with district headquarters, even though network services is a better choice for this type of requirement.

In higher education, the use of outside systems integrators is limited. Contributing factors include the perceived high cost of long-term contracts, a desire to maintain integration control, and a slow movement toward distributed applications. This last factor is becoming less and less important as colleges and universities implement electronic classroom (ECR) and virtual teaching technologies.

6. Professional Services

The professional services product/service market sector is defined as a management consulting activity related to information systems ~~consulting~~ development of custom software as well as education and training. In 1995, the educational market for professional services will be ~~about~~ almost $120 million. It will grow at a CAGR of 14%, reaching ~~about~~ over $220 million in 2000.

The educational professional services market consists primarily of services provided at the higher education level in association with sales of administrative software and custom software development. In particular, as the software solutions become more complex, there is an increasing need for consulting, education and training support services. In addition, the ability to customize standard solutions is increasing the acceptance of third-party-developed administrative software solutions in the higher education market. The demand for combining software and support services in the higher education market is expected to result in parallel growth for the professional services market and the standalone applications software market.

7. Network Services

INPUT defines the network information services market as consisting principally of electronic information services (EIS) and network applications, such as e-mail. Electronic information services are defined as database, news and video text services.

The educational market for network/electronic services is projected to grow at a 18% annual rate, from nearly $350 million in 1995 to over $780 million in 2000, with an expected strong demand for on-line database delivery and e-mail facilities.

~~More and more~~, the education market, particularly colleges and universities, relies on network services for a variety of needs. Most major post-secondary institutions have e-mail networks for

students to access the Internet. Academics use online news and database services to do research and to confer with colleagues in other states and countries. Campuses with highly-developed networks, such as the University of Illinois at Urbana-Champaign, are wired to allow students in dormitories to turn in homework, take exams and contact professors using a PC, some custom software, and local- or wide-area network access.

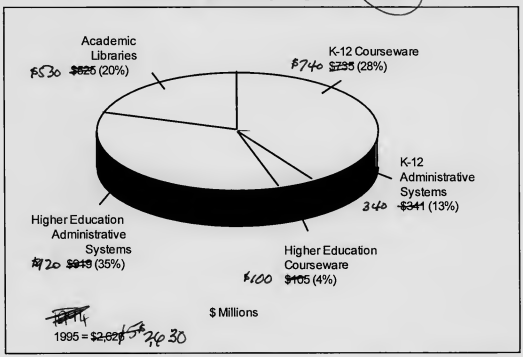
To date, however, e-mail remains the most common application requiring network services on campuses today. Last year, INPUT reported that much of this activity is based on mainframe/terminal communications. This has changed as the price of a basic, modem-equipped PC has come down in the last year.

C
Industry Segment Analysis

The size of the education market for 1995, by principal application segment, is shown in Exhibit III-3.

Exhibit III-3

Education Market by Segment—1995



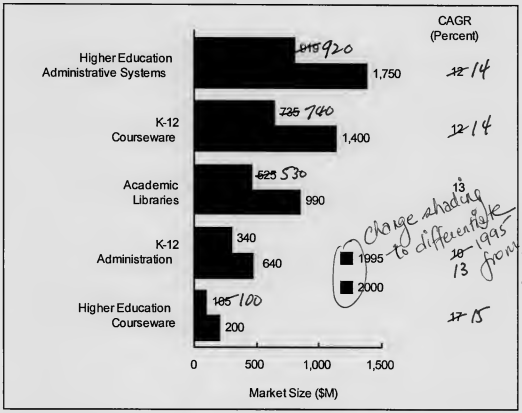
Note: Values have been rounded.

NOTE: PIE SEGMENTS HAVE NOT BEEN ALTERED TO REFLECT NEW VALUES

The 1995 and 2000 information services market sizes and five-year growth rates for the segments of the education industry market are provided in Exhibit III-4.

Exhibit III-4

Education Sector Information Services Markets, by Segment 1995-2000



Note: Values have been rounded.

NOTE: BARS HAVE NOT BEEN ALTERED TO REFLECT NEW VALUES

- The courseware sectors will experience faster growth in higher education (17%) than in K-12 (12%) courseware. This condition is driven by the growing acceptance and availability of commercial software for the higher education segment, and by the small base from which the growth started.

- Administrative systems expenditures at the higher education level are the largest market segment and are growing faster due to the greater availability of funds. In addition, there is a strong need to improve business efficiency and budget performance at the college and university level.

- The use of network services (on-line databases), ~~the use of~~ e-mail and on-line interactivity, and the need to build interlibrary networks fuel the academic library segment's growth. As use of the Internet grows, it will act as a growth stimulator for academic libraries as more information sources go on-line.

online has been previously referenced without the hyphen.

THE INTERNET

ADD 1-2 PARAGRAPH, SEE SHANNON LAKE

CONCLUSIONS & RECOMMENDATIONS

SEE FOLLOWING 3 PAGES

- Administrative systems expenditures at the higher education level are the largest market segment and are growing faster due to the greater availability of funds. In addition, there is a strong need to improve business efficiency and budget performance at the college and university level.

- The use of network services (on-line databases), the use of e-mail and on-line interactivity and the need to build interlibrary networks fuel the academic library segment's growth. As use of the Internet grows, it will act as a growth stimulator for academic libraries as more information sources go on-line.

D
The Internet in Education

In his short story *The Fun They Had*, the late author Isaac Asimov presented a snapshot of a possible future in which two children marvel over a printed book and wonder about the fun their ancestors must have had reading its pages in a physical classroom. You see, the children in this future are educated eclusively by computers located in rooms in their own homes, right next to their bedrooms.

Will the Internet be a catalyst for change in this direction? INPUT believes this is still unclear. Educators, legislators students and parents continue to argue about, and evaluate, the role of computer technology in education. In a sense, the use of technology in education is extremely unbalanced. Internet access is as easy and cheap as a local phone call and and a CompuServe account, yet the tools primary and secondary students need, computers with modems, are in short supply in the vast majority of U.S. public schools. Most school children are unable to use Internet resources until they get to college, unless they or their friends have computers at home. In Washington, D.C., for example, most students have to physically go the the Smithsonian or the Library of Congress for they have no access to the Web pages these institutions offer.

The Internet's value as an educational resource rests upon three issues. First, with the exceptions noted earlier in this report, most public schools do not currently have the resources to give students Internet access. Second, education is not the high priority it should

be in the commercial scramble to establish a profitable on-line presense. Third, giving teenagers and pre-teenagers Internet access has created an exaggerated, but real, concern about protecting children from adult or sexually-explicit materials and communications. Until these three issues are resolved, the Internet's role in education will remain problematic.

E
Conclusions and Recommendations

1. Conclusions

While the state of U.S. education is not exactly grim, there is vast room for improvement. Public schools in particular still face the problems of budget cuts, political agendas and philosophical controversy. The first problem most affects how much, and what kind of, technology is available to most students.

But students are not the only concern. Many educators understand how the personal computer and educational software can improve the efficiency and the content of teaching, but the traditional methods most teachers still use have proven difficult, and time-consuming, to adapt to technology use.

The Goals 2000 program is perhaps the best legislative means to address these and other fundamental problems in education. Goals 2000 presents a clearly-defined set of plans for the effective implementation and use of computer technology in education. However, the government must prove it can improve its spotty record on education.

2. Recommendations

The private sector has the most to gain from better educated students. A well-educated student pool is perhaps the best resource this country could have to enhance global competitiveness and technological innovation.

Vendors who understand this and focus their marketing and product development towards acheiving this goal will be the vendors who succeed in the education market. In a sense, this continues to be a "labor of love", as opportunities in the education market can prove elusive, due to largely to budget constraints, and relationships must be nurtured once established. The rewards for

patience can prove to be great, furthering vendor success and innovation, and education in general.

Forecast Database

This appendix contains the forecast database for the period 1995-2000 and the 1995 MAP database reconciliation.

A
Forecast Database

Exhibit A-1 presents the detailed 1994-2000 forecast for the education sector.

INSERT FROM EXCEL FILES

Exhibit A-1

Education Sector—Market Size Forecast by Product/Service Market Sector, 1994-2000

Product/Service Markets	1993 ($M)	Growth 93-94 (%)	1994 ($)	1995 ($)	1996 ($)	1997 ($)	1998 ($)	1999 ($)	CAGR 94-99 (%)
Sector Total	2,050	12	2,290	2,559	2,866	3,211	3,611	4,064	12
Professional Services	98	12	110	121	134	146	161	178	10
- IS Consulting	26	15	30	33	39	42	48	55	13
- Education & Training	15	13	17	19	21	23	25	27	10
- Software Development	57	11	63	69	74	81	88	96	9
Systems Integration	121	16	140	165	198	231	266	305	17
- Equipment	41	17	48	56	67	79	91	105	17
- Software Products	10	10	11	13	16	19	22	25	18
- Professional Services	68	15	78	93	111	129	148	170	17
- Other	2	50	3	3	4	4	5	5	11
Outsourcing	281	16	326	378	441	525	619	730	17
- Platform Operations	194	15	223	255	240	346	408	483	17
- Applications Operations	76	18	90	109	134	159	187	220	20
- Desktop Services	4	25	5	6	6	7	8	9	12
- Network Management	7	28	8	9	11	13	16	18	18
Processing Services	206		212	217	220	224	229	233	2
- Transaction Processing	206	3	212	217	220	224	229	233	2
Network Services	254	17	298	348	404	469	547	638	16
- Electronic Information Svcs	163	18	192	225	263	307	359	420	17
- Network Applications	91	16	106	123	141	162	188	218	16
Applications Software	828	12	927	1,034	1,154	1,282	1,430	1,595	11
- Mainframe	85	1	86	88	88	89	90	89	1
- Minicomputer	195	8	211	226	239	250	266	283	6
- Workstation/PC	548	15	630	720	827	943	1,074	1,223	14
Turnkey Systems	262	6	277	295	315	334	359	385	7
- Equipment	120	6	127	135	143	150	160	171	6
- Software Products	100	5	105	112	120	129	140	152	8
- Professional Services	42	7	45	48	52	55	59	62	7

SEE A-1 ATTACHED (following)

B

Forecast Reconciliation

Exhibit A-2 presents the forecast reconciliation of the 1994 and 1995 forecasts for the education sector.

Exhibit A-2

Education Sector, 1995 MAP Database Reconciliation

Product/ Service Market	1993 Market				1998 Market				93-98 CAGR	93-98 CAGR
	1993 Market (Forecast) ($M)	1994 Report (Actual) ($M)	Variance From 1993 Forecast ($M)	Variance From 1993 Forecast (%)	1993 Market (Forecast) ($M)	1994 Report (Forecast) ($M)	Variance From 1993 Forecast ($M)	Variance From 1993 Forecast (%)	per data '93 Rpt (%)	per data '94 Rpt (%)
Total	2,043	2,050	7	0	3,650	3,611	-39	-1	12	12
Professional Services	98	98	0	0	162	161	-1	-1	11	10
Systems Integration	121	121	0	0	269	266	-3	-1	17	17
Outsourcing	280	281	1	0	625	619	-6	-1	17	17
Processing Services	205	206	1	0	231	229	-2	-1	2	2
Network Services	253	254	1	0	553	547	-6	-1	17	17
Applications Software	825	828	3	0	1,447	1,430	-17	-1	12	12
Turnkey Systems	261	262	1	0	363	359	-4	-1	7	7

There were some notable differences between the 1994 projection for the 1994 market and the actual expenditures reported in the 1995 forecast. The maximum variance was $35 million in the total education market, or 2% of the total market understatement in 1994. The variance is due to significant shifts in the professional services and outsourcing markets.

Variances in the projections for product/service markets for 1999 range from $133 million for application software to $5 million for

processing services. In terms of percentage variance, all values rounded to a $289 million or 7% understatement of 1999 performance in the 1994 report. This overall variance is driven by a 14% variance in INPUT's forecast of the outsourcing market, and an 8% difference in the applications software forecast. Applications software in particular will grow at 13% annually, remaining the largest market due to anticipated demand as computer-based instruction becomes more prevalent.

The only significant variance in the CAGRs reported in 1994 and 1995 is for professional services, which is forecast to grow 15% annually, versus the 10% reported in 1994. This is due to this market segment's $19 million forecast difference from the 1994 report. This, combined with the small size of the market, accounts for the CAGR difference.

1995

Education Industry
(MVE5)

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June, 1995

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Exhibits

III

A

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