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ABSTRACT

This survey was designed to elicit the perceptions of the members of the educational community on four issues concerning the NII (National Information Infrastructure), and to test whether these visions of the NII were shared by educators. The issues were: (1) the benefits of the NII to the education sector and specifically whether the NII will be able to address the problems in education; (2) impediments to the NII being implemented in schools; (3) incentives necessary to advance the implementation of NII in schools; and (4) roles of the government and the private sector in implementing NII in schools. Respondents were 3,145 members from the following organizations: American Association of School Librarians (AASL); Institute for the Transfer of Technology to Education; National School Boards Association (NSBA); National Association of Secondary School Principals (NASSP); National Rural Education Association (NREA); National Education Association (NEA); Council of Great City Schools (CGCS); and Council of Chief State School Officers (CCSSO). A majority of respondents felt that the lack of funds (95%), lack of literacy skills of students (86%), lack of parental supervisors (95%), lack of student motivation and a societal lack of respect for teachers (90%) were serious or very serious problems. Although an average of 88% of the respondents viewed the NII as having a beneficial or very beneficial effect on the general educational environment, the majority of respondents were pessimistic of the NII's ability to alleviate many of the problems in the education sector. Respondents agreed, however, that the implementation of the NII in schools would lead to a beneficial revision in curriculum content (74%), increased computer skills for students (88%), increased student motivation (64%), greater opportunities for students for independent investigation and research (89%) and increased access to information for educators (87%). Arguing against either the government or the private sector solely investing in and building the NII, a large majority of respondents suggested a collaborative effort among federal and state governments, the local community, and the education sector in the development of a vision for the implementation of the NII in schools. Twenty-eight figures and 44 tables illustrate the data. Two appendices provide demographics and the survey questionnaire. (MAS)

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Center for Telecommunications Management
Research Report Series

# BUILDING THE NATIONAL INFORMATION INFRASTRUCTURE IN K-12 EDUCATION:
## A COMPREHENSIVE SURVEY OF ATTITUDES TOWARDS LINKING BOTH SIDES OF THE DESK

ED 387 080

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**A report of the**
**Global Telecommunications Infrastructure Research Project**
**April 1994**

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THE UNIVERSITY OF SOUTHERN CALIFORNIA

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## EXECUTIVE SUMMARY

The National Information Infrastructure (NII) has been conceived as a seamless network of computers, databases and computer electronics that is expected to alter the interactions between individuals, organizations and firms. In the educational sphere, the NII is envisioned to improve and transform education through the removal of some of the traditional barriers to education, such as the provision of students and institutions with access to experts, scholars and resource material from across the world and by making students' families more involved in the educational process. Eight major educational organizations thus were surveyed to examine whether this vision of the NII were shared by members of the education community.

When asked their opinions on a variety of issues facing the education sector, an overwhelming majority of respondents across the eight educational groups, felt that the lack of funds and equipment (95%), the lack of literacy skills of students (86%), the lack of parental supervision (95%), the lack of student motivation and a lack of societal respect for teachers (90%) were serious or very serious problems.

Although an average of some 88% of the respondents across the eight educational groups viewed the NII as having a beneficial or very beneficial effect on the general educational environment, the majority of respondents, had a narrow enough vision of the effect of the NII on education, that they were pessimistic of the NII's ability to alleviate many of the problems in the education sector. But an overwhelming majority of the respondents did agree that implementation of the NII in schools would lead to a beneficial revision in the curriculum content (74%), increased computer skills for students (88%), increased student

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motivation (64%), greater opportunities for students for independent investigation and research (89%), and increased access to information for educators (87%).

A majority of the respondents felt that the NII would equalize opportunities for economically disadvantaged and disabled students, and, more significantly, these benefits would be evenly distributed across the different regions of the country, or location of schools, as long as there was equal access to the NII.

In order for the NII to be successfully implemented in schools, a majority of the respondents agreed that sufficient funds and equipment, adequate training of educators on the availability and use of information technologies, and inexpensive access to telecommunications were essential. These findings provide primary data across a broad segment of the education community to corroborate the results of the recently released study by the Office of Technology Assessment (United States Congress) entitled "Teachers and Technology: Making the Connection."

Given that a majority of respondents cite adequate training of educators and use of information technology as impediments to the implementation of NII in schools, the dissemination of information on the availability and use of information technologies, and educator training presents an immediate and crucial avenue of collaboration between the corporate private sector and the education community.

Besides the local and federal government, a majority of the respondents also look upon the corporate private sector to help support the implementation of the NII in schools, but agreed that the schools should absorb part of the cost. Arguing against either the government or the private sector solely investing in and building the NII, a large majority

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agreed that the government should work with business and the education sector to develop a vision for the NII, thus strongly suggesting that the successful implementation of the NII in schools requires a collaborative effort between the federal and state governments, the local community and the education sector.

Finally, a large majority of respondents felt that it was the responsibility of the government to ensure equitable access and intellectual freedom of all users of the NII

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## INTRODUCTION

The National Information Infrastructure (NII) has been conceived as a seamless network of computers, databases and computer electronics, designed to provide users with instant access to vast amounts of information. Also known and referred to as the "information highway," "data highway" or "electronic superhighway", the NII is seen as a means to access government and publicly available information. Furthermore, the development of the NII is expected to alter the work and social interactions between individuals, firms and the government, facilitating telecommuting, improving the health care and educational systems, and, ultimately, creating the information society.

In the educational sphere, the NII is envisioned as a vehicle for improving and transforming education. It is viewed as a means whereby traditional barriers to learning are removed, by permitting students and institutions access to scientists, scholars and experts around the globe. It is hoped that, through the NII, teachers, students, workers and institutions will have access to a great variety of institutional resources and to each other, as well as providing educators and administrators with new tools for improving the efficiency and operation of their institutions. The interactive capabilities of the NII are envisioned as making both the content and interactions of great teaching universally and inexpensively available by the end of the century. Furthermore, through the NII, family members may be able to remain in contact with their children's school, and students with disabilities, who previously had limited access to most educational and reference materials, may have greater access.

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## SCOPE AND METHODOLOGY

The survey was designed to elicit the perceptions of the members of the educational community on four broad categories of issues and specifically to test whether the visions of the NII were shared by the educators. The broad categories or issues were:

i) The benefits of the NII to the education sector and specifically whether the NII be able to address the problems in education.

ii) The impediments to the NII being implemented in schools.

iii) The incentives necessary to advance the implementation of the NII in schools.

iv) The roles of the government and the private sector in implementing the NII in schools.

As each of the eight participating educational groups represents a specific cross-section of the diverse educational community, each group was surveyed separately. Random samples of 1200 members each were attained from the American Association of School Librarians (AASL), the Institute for the Transfer of Technology to Education, from the National School Boards Association (NSBA), the National Association of Secondary School Principals (NASSP), the National Rural Education Association (NREA) and the National Association of Elementary School Principals (NAESP). A larger random sample of 1800 members was attained from the National Education Association (NEA) in order to capture the greater variability within the NEA's membership. In the case of the Council of Great City Schools (CGCS) and the Council of Chief State School Officers (CCSSO), the whole population was surveyed, amounting to some 160 and 60 mailings, respectively. The

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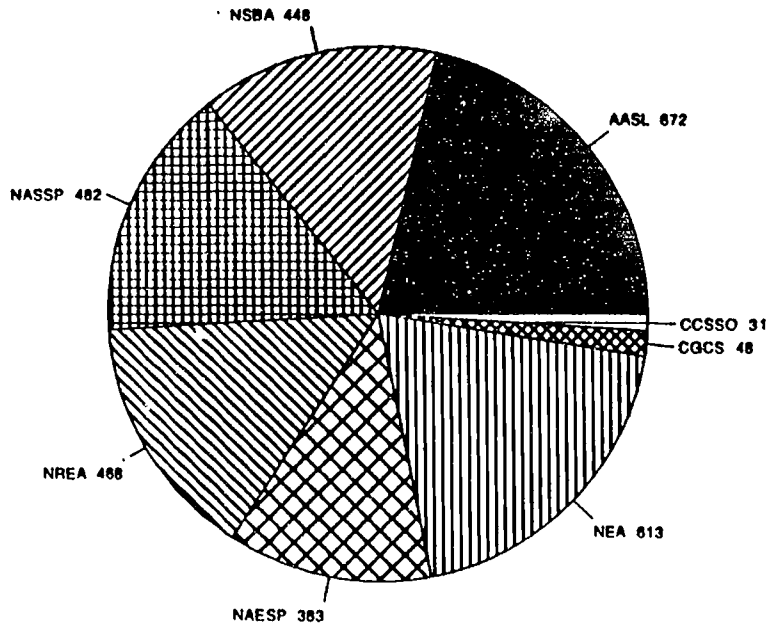
number of respondents from each organization is presented in Chart A-1 with a total for the group of some 3145 respondents. All results thus, statistically, have a margin of error of plus or minus five percent, or for several of the organizations, lower.

The results of the survey are reported, first, as an average for the aggregate group in order to provide an overall sense of the responses on the issues. Secondly, the results are reported for each individual organization, specifically because each group represents a different cross-section of the educational community. It should be stressed that although each organization was surveyed separately, and the diversities of the organizations notwithstanding, there is an **overwhelming consistency in responses** on the various issues across the different groups. All charts and tables in this report, with the exception of the demographic profile, are numbered to correspond with the questions in the actual survey for easy reference.

Chart A-1
Number of Respondents

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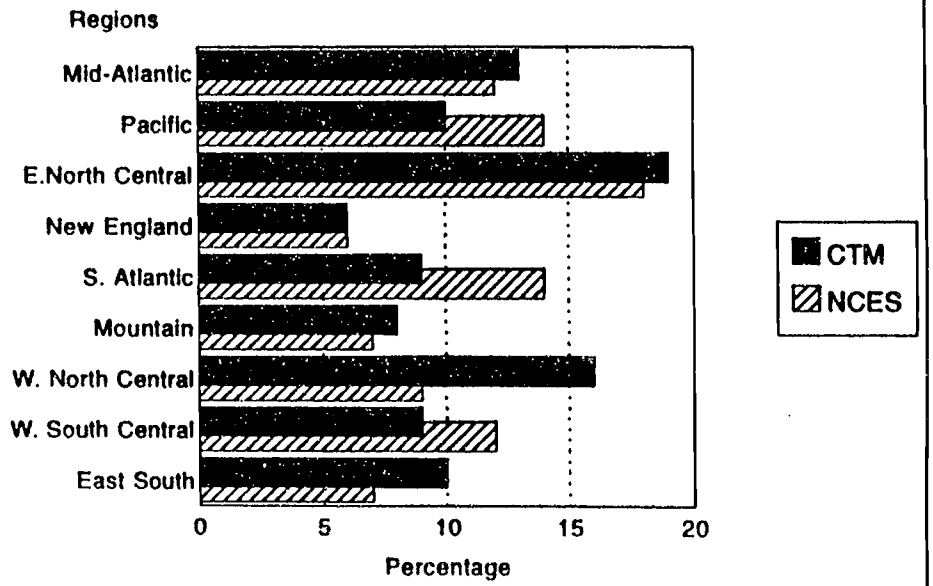
Since the eight participating educational groups each represent a specific section of the educational community, it would be instructive to compare the overall demographic profile of the survey participants with the national average profile attained from the National Center for Education Statistics (NCES). The demographic profile for each of the eight educational organization is given in Appendix A. A comparison of the demographic profiles yield the following insights.

Chart A-2 shows the geographic distribution of respondents' schools in the CTM survey compared with the national averages. As the chart shows, there is some over-representation in the CTM survey of schools from the West North Central region and under-representation of schools in the Pacific, South Atlantic and West South Central regions. This is reflective of the membership

Chart A-2
Percentage Distribution of Schools
(By Geographical Regions)





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concentration of the participating organization.

Accordingly, where appropriate,the analysis of the overall results will be supplemented by an analysis of the responses by regions.

Table A-3 contrasts the profile of the educators in the CTM survey with the national profile. As evident from the table, there is a greater proportion of male educators in the survey compared with the national average. Also, the respondents in the survey, overall, have had more years of education and have been in the education profession longer than the national average for teachers. This is not surprising since the membership of five of the eight participating educational groups comprise principals or senior education administrators.

**TABLE A-3**

| GENDER | NCES | CTM |
|---|---|---|
| Male | 29 | 44 |
| Female | 71 | 56 |
| ETHNICITY | | |
| Caucasian | 88 | 92 |
| African-American | 7 | 3 |
| Others | 5 | 3 |
| EDUCATION | | |
| Bachelor's Degree | 53 | 13 |
| Master's and Above | 46 | 85 |
| YEARS TEACHING | | |
| 1-9 Years | 43 | 10 |
| 10-20 Years | 34 | 28 |
| More Than 20 Years | 23 | 60 |


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Table A-4 illustrates the differences in profile of the respondents' schools with the national profile. In general, as illustrated in the table, there tends to be an over-representation of larger schools, that is, schools with more than 800 students, and an under-representation of medium-size schools, when compared with the national average. Overall, there tends to be a greater representation of suburban schools and under-representation of rural and urban schools in the CTM study as compared with the national profile. This, of course, is not the case for the National Rural Education Association, where 87% of the respondents are from schools in rural areas of the country. Thus, where appropriate, the analysis of the overall results will be juxtaposed with the responses from the NREA to examine if a urban-rural distinction affects the responses.

**TABLE A-4**

| SCHOOL SIZE | NCES | CTM |
|---|---|---|
| Less Than 400 Students | 21 | 19 |
| Between 400 and 800 Students | 45 | 36 |
| More Than 800 students | 35 | 42 |
| LOCATION | | |
| Rural | 55 | 39 |
| Suburban | 18 | 40 |
| Urban | 27 | 19 |
| MAJORITY ETHNIC GROUP IN SCHOOL | | |
| Caucasians | 72[a] | 80 |
| African-Americans | 15 | 6 |
| Hispanics | 9 | 5 |
| Asians or Pacific Islanders | 3 | 0.03 |
| Native Americans | 1 | 1 |
| No Group Constitutes A Majority | n.a. | 6 |

a. NCES measures percent of students in schools belonging to a particular ethnic groups

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Chart A-5 provides some insights into the levels of penetration of NII-type equipment and capabilities into the homes of the survey respondents. On average, then, about 87% of survey respondents have TV Monitors in their homes, as compared with 77% having personal computers at home and only 27% with access from their homes to commercial on-line databases or the Internet. These figures seem to be higher for the national average.

Chart A-6 illustrates the respondents' understanding of the NII. As the chart illustrates, most respondents expressed some level of understanding of the NII. However, relatively more respondents from the NEA expressed no or little knowledge about the NII as compared with the other educational organizations.

**Chart A-5**

| NII-TYPE EQUIPMENT | avg |
|---|---|
| a. personal computer | 77 |
| b. networked personal computer | 9 |
| c. telephone | 93 |
| d. FAX | 22 |
| e. TV Monitor | 87 |
| f. VCR | 96 |
| g. cable/satellite T.V. | 72 |
| h. optical disc technology | 25 |
| i. commercial on-line databases or Internet | 27 |
| j. video transmission/distance learning | 0.6 |
| k. voice mail or telephone answering machine | 53 |
| l. e-mail | 23 |

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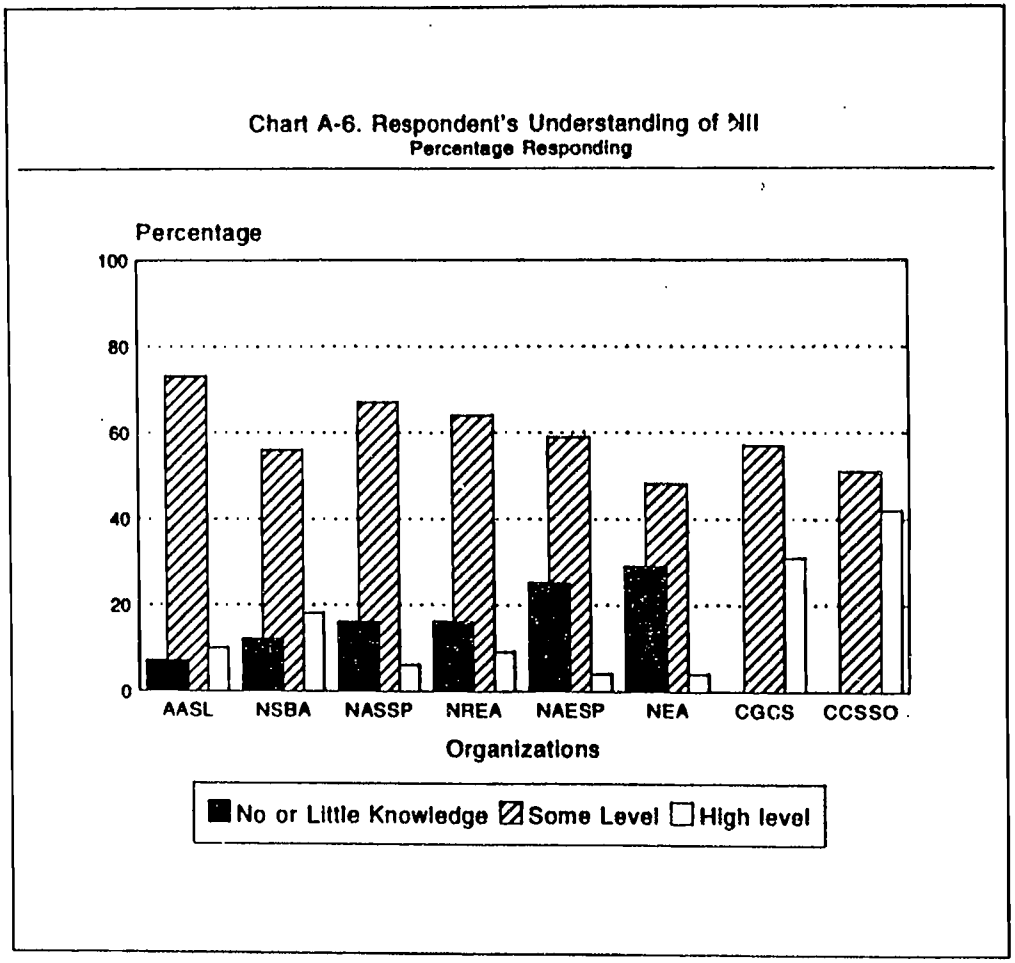
As the overall demographic profile of respondents doesn't correspond exactly with the national average for teachers, it would be more appropriate, on some issues, to examine the responses as follows:

i) individual organizational responses can provide insights on the views of a particular segment of the education community.

ii) responses on the basis of specific demographic characteristics can check uniformity in responses across geographical distribution of schools, school size, and locality of schools.

iii) responses from the NEA where the demographic profile of the respondents corresponds more closely with the national average for teachers can address issues particularly relevant to teachers.

The results of the survey, particularly on relatively more important issues, are analyzed accordingly. A description of the participating organizations follows:

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## American Electronics Association

The American Electronics Association was founded in 1943 by 25 California electronics firms seeking a more equitable share of the nation's government contracts. Today, the trade group represents some 3,000 companies located in technology communities throughout the United States.

Through a broad range of member services and industry advocacy programs, the AEA is dedicated to strengthening the U.S. electronics and information technology industry's global competitive position.

AEA's spectrum of member opportunities include financial conferences, management programs, compensation surveys, group advantage members services, an industry statistics program, local council networking and government relations programs.

AEA provides its members with meaningful and productive links to academia. Some 50 engineering universities are associate members. A K-12 effort is aimed at building quality general education and enhancing worker skills, with emphasis on math and science and use of technology to increase teachers' productivity and student learning.

AEA member companies are all U.S. based and span the breath of the electronics food chain. Although the giants of the industry are AEA members, almost 70 percent of its membership comprises with less than 250 employees and under $50 million in annual sales.

The AEA has grown with the U.S. technology community. For 50 years, AEA has been the accepted voice of the American electronics industry.

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## Center for Telecommunications Management, The University of Southern California

The Center for Telecommunications Management at the University of Southern California provides telecommunications professionals with the essential tools for staying on the cutting edge of the fast-growing telecommunications and information services industries.

Founded in 1985, CTM is part of the Graduate School of Business Administration at the university. As the only university-based center in the country dedicated to the understanding of emerging and policy issues facing the industry, CTM offers management education, industry research, and publications that present new strategies for a global, market-driven environment.

CTM research projects generate timely information and new ideas on developments in the rapidly changing telecommunications industry. Research activities at CTM include generalized cross-industry research reports on strategic and policy issues, contract research for individual companies and government agencies, syndicated research on important issues facing industry executives and regulators, and the Global Telecommunications Infrastructure Research Project (GTRIP). The GTRIP is a multiphase project examining the strategic and policy aspects of network modernization worldwide.

CTM research projects draw on the outstanding faculty at the School of Business Administration and other schools at USC, in addition to other university and private sector researchers, and from the academic-industry collaboration, through the Visiting Fellows program.

## American Association of School Librarians

The AASL is a division of the American Library Association. The 8,000 member AASL works to improve library media programs, standards and services in elementary and secondary schools. Founded in 1876, the 55,000 American Librarians Association is the oldest and largest library association in the world.

## Council of Chief State School Officers

The CCSSO is a nationwide, non-profit organization, comprising the 57 public officials who head the departments of elementary and secondary education, or other aspects of education, in the 50 states, five U.S. extra-state jurisdictions, the District of Columbia, and the Department of Defense Dependents Schools. Since 1908, CCSSO members have developed consensus on major education issues, which the Council advocates before the President, federal agencies, Congress, professional and civic associations, and the public.

## Council of Great City Schools

The CGCS is the only organization in the nation exclusively representing the needs of urban public schools. Composed of 46 large school districts, its mission is to promote the cause of urban schools and to advocate for inner-city students through legislation, research and media relations. The organization also provides a network for school districts sharing common problems to exchange information, and to collectively address new challenges as they emerge, in order to deliver the best possible education to the nation's urban youth.

## National Association of Elementary School Principals

Established in 1921, the NAESP serves 26,000 elementary and middle school principals nationwide in Canada and overseas. Dedicated to educational excellence and high professional standards among K-8 educators, NAESP works at the national, state and local levels to help school leaders provide the best possible education to the children and youth in their schools. Headquartered in Washington, D.C. metropolitan area, the NAESP has an affiliate in every state.

## National Association of Secondary School Principals

The NASSP is the nation's largest school leadership organization, representing more than 42,000 high school and middle level educators. Its membership includes principals, assistant principals, assistant superintendents, deans of schools, and college and university professors. NASSP focuses on professional development to help school leaders become more proficient in serving middle level and high school students. NASSP does this through sponsoring a national convention; more than 30 multi-day, single topic seminars; special workshops and award-winning publications. The Association also promotes the interests of education in Congress; conducts research on issues critical to middle level and high schools; sponsors the National Association of Student Councils, the National Honor Society and Partnerships International; and provides consultation services to members on topics such as instructional improvement,

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student government and urban education.

**National Education Association**

The NEA was founded in 1857 to "elevate the character and advance the interest of the profession of teaching and to promote the cause of education in the United States." NEA has more than 2.1 million members, including elementary and secondary teachers, higher education faculty, education support personnel, retired educators, and students preparing to become teachers. NEA is the nation's largest professional employee organization.

**National Rural Education Association**

The NREA is the oldest national organization of its kind in the United States. Formerly known as the REA, the association traces its origins back to 1907 when it was originally founded as the Department of Rural Education. Through the years, it has evolved as a strong and respected organization of rural school administrators, teachers, board members, regional service agency personnel, researchers, business and industry representatives and other interested in maintaining the vitality of rural school systems across the country.

**National School Board Association**

The NSBA is the nationwide advocacy organization for public school governance. NSBA's mission is to foster excellence and equity in public elementary and secondary education in the United States through local school board leadership. NSBA achieves its mission by amplifying the influence of school boards across the country in all public forums relevant to federal and national education issues, representing the school board's perspective to federal government agencies and national organizations that affect education and by providing vital information and services to Federation Members and school boards throughout the nation.

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# RESULTS OF THE SURVEY

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**ABLE 1**

w would you rate the following problems facing education today?

**PERCENTAGE RESPONDING SERIOUS (3,4) TO VERY SERIOUS (5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. overcrowding in the classrooms | 82 | 89 | 80 | 77 | 72 | 80 | 90 | 82 | 87 |
| b. **lack of funds and equipment** | **95** | **96** | **97** | **95** | **97** | **94** | **90** | **96** | **100** |
| c. security of persons/or school property | 78 | 85 | 79 | 73 | 71 | 76 | 78 | 96 | 94 |
| d. teenage pregnancy | 82 | 85 | 81 | 81 | 80 | 80 | 81 | 90 | 83 |
| e. gangs in school | 77 | 82 | 80 | 72 | 65 | 81 | 80 | 94 | 84 |
| f. undercompensation of teachers and administrators | 86 | 90 | 75 | 87 | 85 | 87 | 87 | 83 | 86 |
| g. obsolescence of curriculum | 75 | 78 | 81 | 77 | 78 | 67 | 67 | 85 | 90 |
| **h. lack of literacy skills of students** | **86** | **92** | **85** | **82** | **80** | **86** | **87** | **98** | **100** |
| **i. lack of parental supervision of students** | **95** | **96** | **95** | **96** | **94** | **94** | **94** | **87** | **93** |
| j. **lack of student motivation** | **92** | **95** | **89** | **94** | **92** | **90** | **91** | **90** | **93** |
| k. inflexibility of bureaucratic requirements | 82 | 80 | 83 | 86 | 89 | 82 | 84 | 68 | 68 |
| l. student truancy | 67 | 68 | 66 | 70 | 64 | 61 | 67 | 82 | 74 |
| m. too short of a school year | 50 | 47 | 62 | 50 | 54 | 59 | 36 | 58 | 65 |
| n. too much emphasis on test scores | 78 | 81 | 79 | 78 | 78 | 80 | 75 | 73 | 80 |
| o. too much emphasis on rote learning | 69 | 69 | 74 | 74 | 70 | 69 | 57 | 73 | 90 |
| p. **lack of societal respect for teachers** | **90** | **93** | **81** | **91** | **88** | **92** | **92** | **88** | **94** |


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## Problems in Education

Table 1 presents a variety of issues in education that respondents were asked to gauge as to their degree of seriousness, ranging from not at all serious to very serious. As shown in Table 1, virtually all the issues were deemed serious or very serious by a substantial majority of the respondents across the 8 educational organizations. However, an overwhelming majority of respondents, between 90% and 100% across the 8 groups, felt that the lack of funds and equipment, the lack of literacy skills of students, the lack of parental supervision, the lack of student motivation and a lack of societal respect of teachers were serious or very serious problems.

Furthermore, as Table 1B illustrates, the seriousness of lack of funds and equipment is not

Chart 1. Problems Facing Education
Percentage Responding Serious (3,4) Or Very Serious (5)

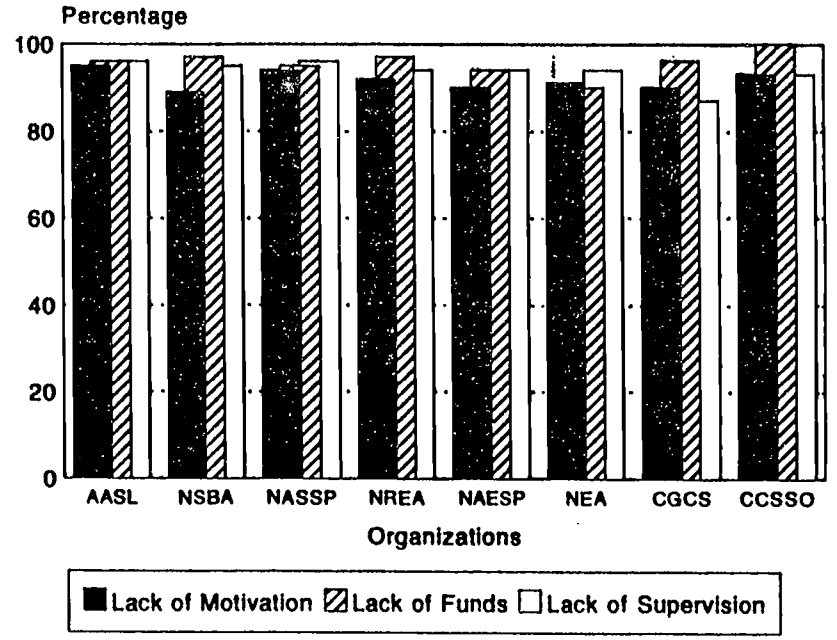


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**TABLE 1B (REGIONAL)**
How would you rate the problems facing education?

## LACK OF FUNDS AND EQUIPMENT
### Percentage Within Each Region Responding Serious (3,4) to Extremely Serious (5)

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| Mid-Atlantic (NY, NJ, PA) | 97 | 94 | 96 | 95 | 82 | 94 |
| Pacific (CA, OR, WA, AK, HI) | 83 | 98 | 98 | 99 | 94 | 95 |
| East North Central (OH, IN, IL, MI, WI) | 99 | 97 | 96 | 100 | 99 | 93 |
| New England (ME, MA, VT, NH, RI, CT) | 98 | 100 | 97 | 100 | 96 | 95 |
| South Atlantic (DE, MD, DC, VA, WV, NC, SC) | 96 | 97 | 89 | 100 | 94 | 93 |
| Mountain (MT, WY, CO, ID, NM, NV, AZ, UT) | 98 | 100 | 100 | 98 | 95 | 96 |
| West North Central (MN, IA, MO, ND, SD, NE, KS) | 99 | 99 | 99 | 94 | 96 | 94 |
| West South Central (AR, LA, OK, TX) | 97 | 100 | 100 | 98 | 94 | 100 |
| East South (KY, TN, AL, MS, GA, FL) | 89 | 97 | 89 | 100 | 97 | 86 |
| Other | 100 | 100 | 0 | 100 | 100 | 100 |
| | | | | | | |


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significantly different across the various survey regions. The problem of undercompensation of teachers and administrators, on the other hand, was viewed by a relatively smaller majority of respondents, between 75% to 90% across the 8 educational groups, as a serious or very serious problem. However, if examined regionally, as shown in Table 1F, an overwhelming majority of respondents in the South Atlantic, Mountain, West South Central, and East South Central regions, relative to the other regions of the country, felt it to be a serious or very serious problem.

**TABLE 1F (REGIONAL)**

**UNDERCOMPENSATION OF TEACHERS AND ADMINISTRATORS**
**Percentage Within Each Region Responding Serious (3,4) to Extremely Serious (5)**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| Mid-Atlantic (NY, NJ, PA) | 79 | 60 | 72 | 78 | 69 | 77 |
| Pacific (CA, OR, WA, AK, HI) | 67 | 79 | 90 | 83 | 94 | 90 |
| East North Central (OH, IN, IL, MI, WI) | 95 | 70 | 88 | 76 | 85 | 89 |
| New England (ME, MA, VT, NH, RI, CT) | 85 | 55 | 72 | 63 | 74 | 88 |
| **South Atlantic (DE, MD, DC, VA, WV, NC, SC)** | **90** | **89** | **94** | **90** | **97** | **93** |
| **Mountain (MT, WY, CO, ID, NM, NV, AZ, UT)** | **93** | **80** | **97** | **88** | **96** | **93** |
| West North Central (MN, IA, MO, ND, SD, NE, KS) | 96 | 78 | 92 | 91 | 89 | 94 |
| **West South Central (AR, LA, OK, TX)** | **97** | **93** | **90** | **88** | **100** | **100** |
| **East South (KY, TN, AL, MS, GA, FL)** | **96** | **97** | **94** | **93** | **100** | **94** |
| Other | 100 | 0 | 100 | 100 | 100 | 60 |

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**TABLE 2(I)**

The what extent has your school accomplished each task below:

**PERCENTAGE RESPONDING NOT AT ALL (1), SOME EXTENT (2,3) GREAT EXTENT (4,5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. revised the curriculum to correlate with the tools and information resources available for computer technology today. | | | | | | | | | |
| NOT AT ALL | 6 | 8 | 4 | 5 | 3 | 9 | 8 | 6 | 0 |
| SOME EXTENT | 63 | 66 | 59 | 63 | 63 | 64 | 59 | 71 | 65 |
| GREAT EXTENT | 30 | 27 | 36 | 32 | 31 | 26 | 28 | 19 | 23 |
| b. acquired sufficient numbers of personal computers | | | | | | | | | |
| NOT AT ALL | 11 | 14 | 4 | 9 | 7 | 14 | 16 | 11 | 0 |
| SOME EXTENT | 59 | 62 | 56 | 61 | 62 | 60 | 54 | 71 | 74 |
| GREAT EXTENT | 29 | 25 | 40 | 29 | 29 | 25 | 30 | 15 | 14 |
| c. periodically upgraded software and hardware | | | | | | | | | |
| NOT AT ALL | 8 | 11 | 4 | 7 | 4 | 10 | 11 | 10 | 6 |
| SOME EXTENT | 56 | 57 | 50 | 55 | 61 | 57 | 54 | 62 | 68 |
| GREAT EXTENT | 34 | 31 | 44 | 36 | 34 | 32 | 30 | 23 | 13 |


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The lack of funds and equipment is reflected in Tables 2(I) and 2(II). When asked the extent to which they have acquired sufficient numbers of personal computers, between 54% to 74% of respondents across the eight educational groups, responded that their schools have done so only to some extent.

If the installation of Local Area Networks (LANs) or subscription to on-line services is used as a gauge of the technology utilization in schools and school districts, then between 12% and 44% of respondents, across the eight groups, had not installed LAN at all and between 30% and 58% had not been provided subscription to on-line services. This is further reflected in Charts 2D and 2E. The severity of the problem is highlighted by a comparison of the status of equipment of respondents in the NEA with the other educational groups. This

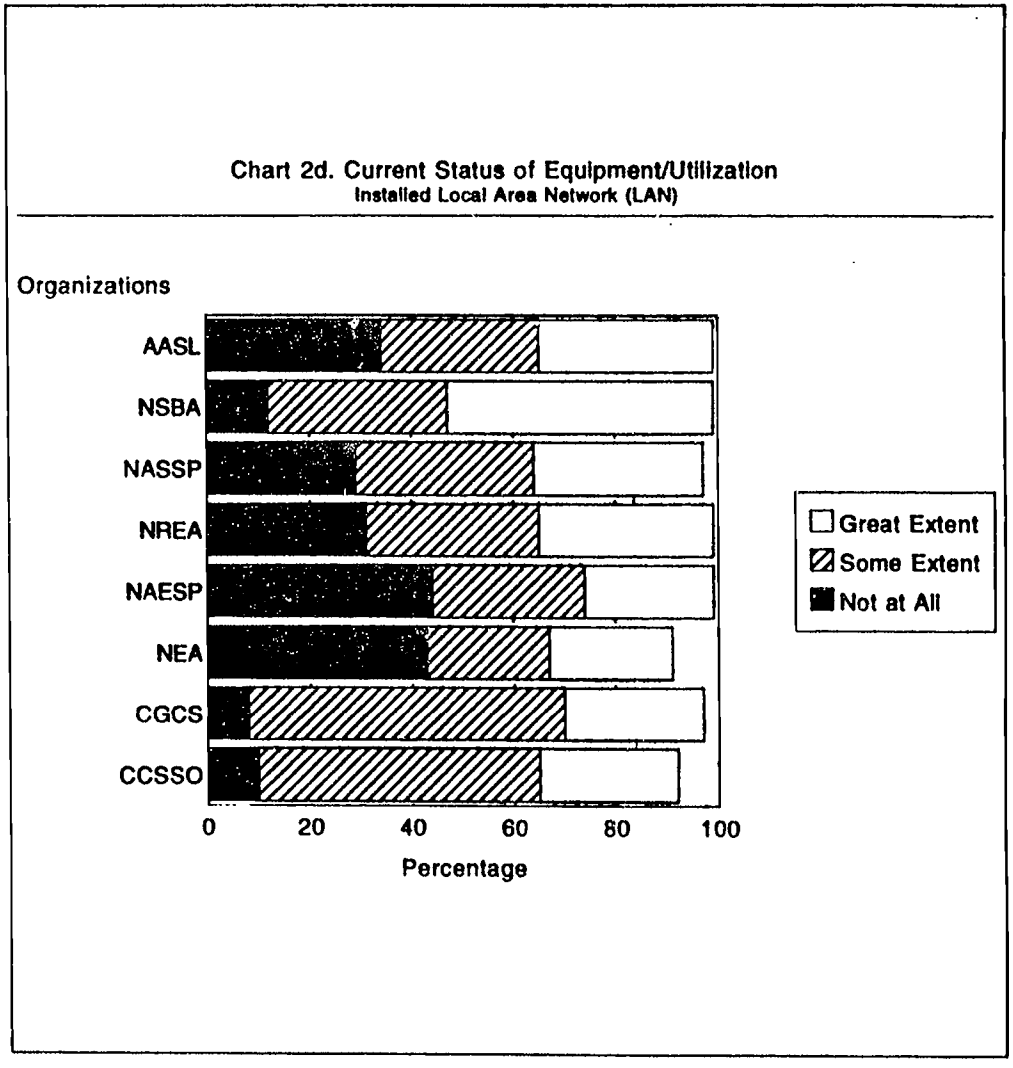


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**TABLE 2(II) The what extent has your school accomplished each task below:**

**PERCENTAGE RESPONDING NOT AT ALL(1), SOME EXTENT (2,3) AND GREAT EXTENT (4,5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| d. installed local area network (LAN) | | | | | | | | | |
| NOT AT ALL | 32 | 34 | 12 | 29 | 31 | 44 | 43 | 8 | 10 |
| SOME EXTENT | 32 | 31 | 35 | 35 | 34 | 30 | 24 | 62 | 55 |
| GREAT EXTENT | 33 | 34 | 52 | 35 | 34 | 25 | 24 | 27 | 27 |
| e. provided subscription to on-line services, such as Prodigy or Internet, to all staff | | | | | | | | | |
| NOT AT ALL | 47 | 50 | 30 | 43 | 42 | 58 | 58 | 19 | 26 |
| SOME EXTENT | 32 | 28 | 45 | 38 | 38 | 27 | 20 | 48 | 46 |
| GREAT EXTENT | 19 | 21 | 24 | 19 | 19 | 15 | 14 | 32 | 16 |
| f. computerized school's library system | | | | | | | | | |
| NOT AT ALL | 21 | 19 | 10 | 20 | 22 | 31 | 27 | 13 | 10 |
| SOME EXTENT | 25 | 8 | 28 | 29 | 34 | 22 | 22 | 42 | 42 |
| GREAT EXTENT | 51 | 63 | 60 | 50 | 42 | 45 | 46 | 42 | 35 |
| g. provided staff development opportunities for teachers to help change teaching styles | | | | | | | | | |
| NOT AT ALL | 6 | 6 | 3 | 4 | 3 | 5 | 12 | 0 | 3 |
| SOME EXTENT | 50 | 55 | 39 | 51 | 50 | 51 | 48 | 58 | 58 |
| GREAT EXTENT | 43 | 38 | 57 | 44 | 45 | 44 | 37 | 39 | 26 |



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juxtaposes, the status of equipment and its utilization in the classrooms, with that in the offices of the technology specialists, such as the library media specialist. Tables 2D-1 and 2D-2 show the distribution of schools within each region that have "not at all" installed LANs, and installed LANs "to some extent," respectively. Table 2D-1 shows that there is a relatively greater percentage of schools in the Pacific and West Central regions that have "not at all' installed LAN as compared with the other regions of the country. Furthermore, Table 2D-2 illustrates that more schools in the South Atlantic region of the country have installed LAN "to some extent" relative to the other regions.

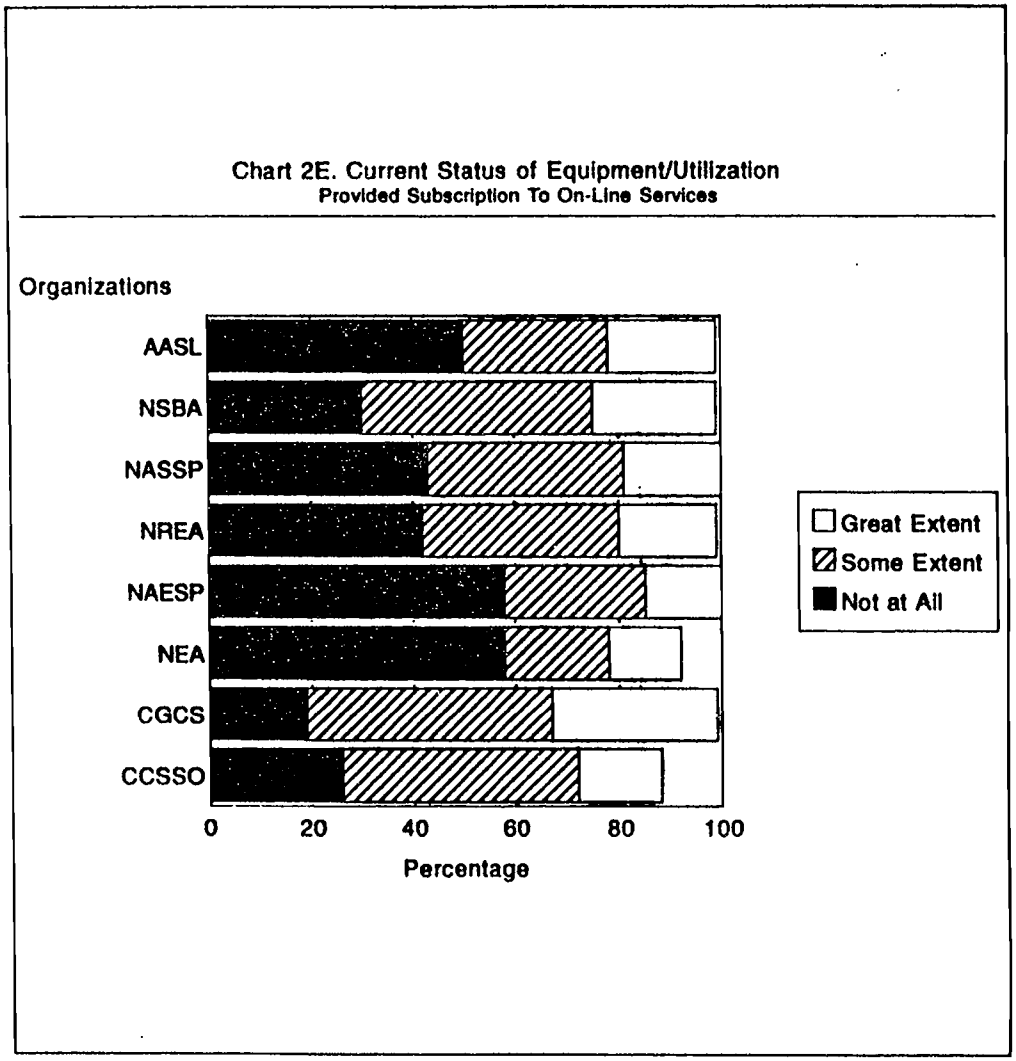



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**TABLE 2D-1 (REGIONAL)**
To what extent has your school accomplished each task below?

## INSTALLED LOCAL AREA NETWORK (LAN)
### Percentage Distribution of Schools Within Each Region That Have NOT AT ALL Installed LAN

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| Mid-Atlantic (NY, NJ, PA) | 39 | 19 | 31 | 28 | 42 | 59 |
| Pacific (CA, OR, WA, AK, HI) | 50 | 15 | 40 | 35 | 52 | 55 |
| East North Central (OH, IN, IL, MI, WI) | 38 | 10 | 25 | 32 | 49 | 47 |
| New England (ME, MA, VT, NH, RI, CT) | 40 | 20 | 29 | 40 | 72 | 41 |
| South Atlantic (DE, MD, DC, VA, WV, NC, SC) | 34 | 11 | 28 | 5 | 36 | 48 |
| Mountain (MT, WY, CO, ID, NM, NV, AZ, UT) | 24 | 13 | 34 | 44 | 39 | 50 |
| West North Central (MN, IA, MO, ND, SD, NE, KS) | 30 | 8 | 24 | 32 | 39 | 36 |
| West South Central (AR, LA, OK, TX) | 34 | 13 | 41 | 32 | 59 | 52 |
| East South (KY, TN, AL, MS, GA, FL) | 21 | 9 | 21 | 21 | 24 | 41 |
| Other | 68 | 0 | 100 | 33 | 50 | 50 |
| | | | | | | |


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**TABLE 2D-2 (REGIONAL)**
To what extent has your school accomplished each task below?

**INSTALLED LOCAL AREA NETWORK (LAN)**
**Percentage Distribution of Schools Within Each Region That Have TO SOME EXTENT Installed LAN**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| Mid-Atlantic (NY, NJ, PA) | 27 | 28 | 46 | 28 | 35 | 19 |
| Pacific (CA, OR, WA, AK, HI) | 17 | 41 | 29 | 39 | 27 | 23 |
| East North Central (OH, IN, IL, MI, WI) | 33 | 38 | 33 | 36 | 28 | 26 |
| New England (ME, MA, VT, NH, RI, CT) | 29 | 0 | 51 | 40 | 24 | 36 |
| South Atlantic (DE, MD, DC, VA, WV, NC, SC) | 24 | 49 | 31 | 55 | 36 | 31 |
| Mountain (MT, WY, CO, ID, NM, NV, AZ, UT) | 49 | 38 | 24 | 27 | 32 | 23 |
| West North Central (MN, IA, MO, ND, SD, NE, KS) | 41 | 37 | 37 | 33 | 32 | 29 |
| West South Central (AR, LA, OK, TX) | 36 | 27 | 31 | 39 | 18 | 33 |
| East South (KY, TN, AL, MS, GA, FL) | 32 | 32 | 27 | 31 | 38 | 27 |
| Other | 33 | 100 | 0 | 67 | 0 | 25 |
| | | | | | | |


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**TABLE 2D-3 (LOCALITY)**
To what extent has your school accomplished each task below:

## INSTALLED LOCAL AREA NETWORK (LAN)
### Percentage Distribution of the Extent to Which Schools Have Installed LAN in Each Location

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| **NOT AT ALL** | | | | | | |
| Rural | 38 | 20 | 33 | 32 | 47 | 53 |
| Suburban | 31 | 9 | 24 | 27 | 43 | 47 |
| Urban | 37 | 9 | 31 | 25 | 40 | 41 |
| **SOME EXTENT** | | | | | | |
| Rural | 33 | 26 | 30 | 34 | 27 | 19 |
| Suburban | 30 | 38 | 40 | 39 | 31 | 30 |
| Urban | 35 | 41 | 32 | 42 | 38 | 32 |
| **GREAT EXTENT** | | | | | | |
| Rural | 29 | 54 | 36 | 34 | 28 | 28 |
| Suburban | 39 | 52 | 36 | 33 | 25 | 23 |
| Urban | 28 | 50 | 37 | 33 | 22 | 27 |



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Table 2D-3 compares the levels of LAN installation with the location of schools. As the Table illustrates, the levels of LAN installation in schools are not significantly different for urban, suburban or rural schools. However, as Table 2D-4, which provides a comparison of the levels of LAN installation in schools against the size of schools, there are a greater percentage of smaller schools, that is schools with less than 400 students, that have "not at all" installed LAN or installed LAN "to some extent", compared with medium-size and large schools. This may yet again reflect the lack of sufficient funds, especially for smaller schools.

**TABLE 2D-4 (SCHOOL SIZE)**
To what extent has your school accomplished each task below:

**INSTALLED LOCAL AREA NETWORK (LAN)**
**Percentage Distribution of Different Size Schools And the Levels of LAN Installation**

| | SCHOOL SIZE | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|---|
| NOT AT ALL | Less Than 400 Students | 48 | 22 | 38 | 47 | 51 | 56 |
| | Between 400 and 800 students | 41 | 15 | 32 | 32 | 39 | 47 |
| | More than 800 Students | 24 | 9 | 24 | 21 | 45 | 44 |
| SOME EXTENT | Less Than 400 Students | 26 | 38 | 28 | 27 | 27 | 27 |
| | Between 400 and 800 Students | 25 | 26 | 35 | 30 | 34 | 22 |
| | More than 800 Students | 40 | 38 | 38 | 42 | 29 | 30 |
| GREAT EXTENT | Less Than 400 Students | 26 | 40 | 35 | 26 | 23 | 17 |
| | Between 400 and 800 Students | 33 | 58 | 33 | 38 | 27 | 29 |
| | More than 400 Students | 36 | 53 | 38 | 37 | 27 | 26 |


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## TABLE 3

What equipment or capabilities do you currently have in your classroom, library and/or office?

**PERCENTAGE RESPONDING**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| state of the art personal computers | 54 | 55 | 69 | 61 | 63 | 44 | 32 | 77 | 64 |
| earlier generation of personal computers | 74 | 83 | 80 | 76 | 77 | 75 | 54 | 73 | 68 |
| obsolescent models of personal computers | 48 | 53 | 44 | 52 | 50 | 51 | 41 | 54 | 42 |
| **networked personal computers** | **50** | **49** | **71** | **60** | **54** | **41** | **29** | **65** | **61** |
| telephone | 85 | 91 | 88 | 89 | 91 | 92 | 64 | 73 | 87 |
| fax | 58 | 44 | 75 | 74 | 81 | 50 | 32 | 69 | 81 |
| **TV Monitor** | **83** | **90** | **85** | **88** | **87** | **80** | **70** | **79** | **71** |
| **VCR** | **84** | **90** | **83** | **87** | **89** | **85** | **72** | **71** | **77** |
| cable/satellite T.V. | 63 | 73 | 66 | 69 | 73 | 56 | 42 | 56 | 58 |
| optical disc technology | 65 | 82 | 74 | 70 | 68 | 55 | 42 | 63 | 65 |
| **internet connection** | **40[b]** | **48** | **56** | **42** | **47** | **27** | **20** | **58** | **65** |
| commercial on-line databases | 19 | 28 | 30 | 20 | 14 | 8 | 7 | 27 | 35 |
| video/transmission/distance learning | 17 | 13 | 27 | 20 | 26 | 7 | 8 | 35 | 55 |
| voice mail | 18 | 14 | 30 | 19 | 15 | 17 | 11 | 50 | 52 |
| e-mail | 42 | 50 | 60 | 40 | 42 | 38 | 23 | 56 | 68 |

b. The OTA study reports that only 3% of instructional rooms (classrooms, labs and media centers) have access to the Internet. The higher percentages here may reflect respondents' reporting of multi-site access to the internet



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The lack of funds and equipment is also reflected in Table 3 and Chart 3. While 70% to 90% of respondents across the 8 educational groups have T.V. monitors in their classrooms, libraries or offices, between 21% and 71% similarly had networked computers and between 20% and 65% had internet connections. Attention should once again be drawn to the differences between the NEA and the other educational organizations, reflecting a more severe shortage of equipment in the classrooms, as opposed to other functional areas. Table 3A provides a regional distribution of schools with "state of the art" computers, and while there is no significant differences between schools in the various regions, the differences between the prevalence of "state of the art" computers among the NEA and the other educational organizations can again be appreciated.

Chart 3. Equipment in the Classroom, Library or Office

Percentage of Respondents Having Internet Connections
Networked Personal Computers and TV Monitors in Their Classroom, Library or Office

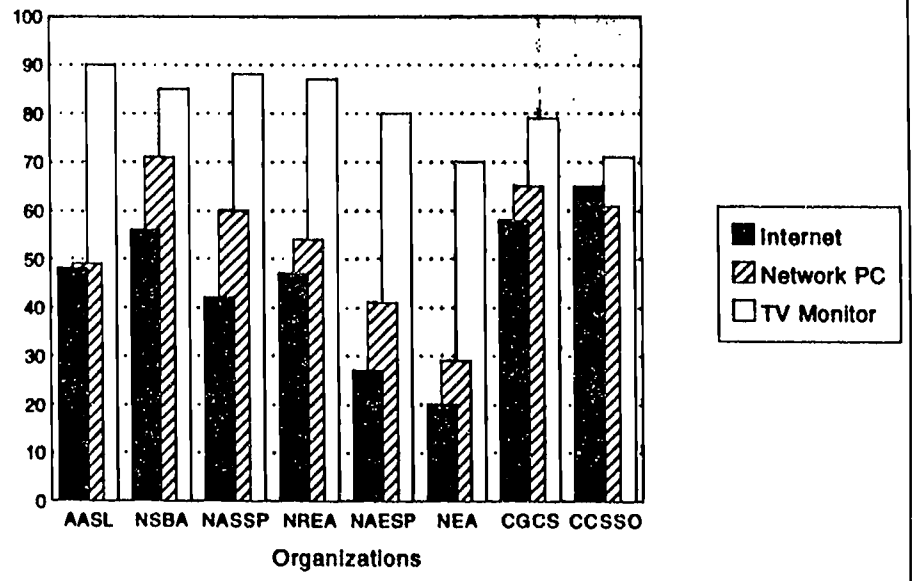



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**TABLE 3A (REGIONAL)**
What equipment or capabilities do you currently have in your classroom, library and/or office?

**STATE OF THE ART COMPUTERS**
**Percentage Distribution of Schools Within Each Region With State of the Art Computers**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| Mid-Atlantic (NY, NJ, PA) | 56 | 70 | 63 | 73 | 40 | 26 |
| Pacific (CA, OR, WA, AK, HI) | 33 | 69 | 60 | 56 | 55 | 26 |
| East North Central (OH, IN, IL, MI, WI) | 48 | 70 | 59 | 65 | 48 | 33 |
| New England (ME, MA, VT, NH, RI, CT) | 60 | 64 | 50 | 50 | 28 | 23 |
| South Atlantic (DE, MD, DC, VA, WV, NC, SC) | 53 | 51 | 50 | 70 | 39 | 37 |
| Mountain (MT, WY, CO, ID, NM, NV, AZ, UT) | 50 | 60 | 58 | 55 | 34 | 24 |
| West North Central (MN, IA, MO, ND, SD, NE, KS) | 51 | 69 | 68 | 68 | 45 | 37 |
| West South Central (AR, LA, OK, TX) | 58 | 83 | 63 | 57 | 59 | 31 |
| East South (KY, TN, AL, MS, GA, FL) | 69 | 82 | 65 | 79 | 49 | 55 |
| Other | 0 | 100 | 100 | 33 | 100 | 0 |
| | | | | | | |

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Table 4 provides some insights into the types of software applications among the different educational groups. As the table illustrates, between 83% and 98% of respondents' schools, across the eight educational groups, have some type of wordprocessing programs whiie only 17% to 55%, across the eight groups, had subscription to some on-line services.

**TABLE 4**
Which of the following software applications or functions does your school or office currently possess:

**PERCENTAGE RESPONDING**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| wordprocessing (e.g. Microsoft Word, Wordperfect) | 94 | 96 | 98 | 98 | 98 | 95 | 83 | 92 | 87 |
| spreadsheets (e.g. Lotus, Excel) | 73 | 68 | 88 | 83 | 87 | 61 | 53 | 83 | 77 |
| graphics/art applications | 65 | 64 | 77 | 71 | 67 | 58 | 53 | 67 | 74 |
| desktop publishing (e.g. Pagemaker) | 65 | 61 | 82 | 79 | 74 | 56 | 45 | 69 | 67 |
| educational software (e.g. drill and practice software) | 78 | 79 | 80 | 79 | 80 | 83 | 72 | 56 | 68 |
| multimedia (e.g. audio, video, graphics and text, CD-ROM encyclopedia) | 73 | 85 | 78 | 76 | 72 | 68 | 59 | 58 | 74 |
| an on-line service (e.g. Prodigy, AmericaOnline, Compuserve, etc.) | 29 | 31 | 44 | 31 | 27 | 21 | 17 | 33 | 55 |
| electronic games | 40 | 32 | 36 | 54 | 46 | 38 | 41 | 25 | 35 |


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**TABLE 5**

How beneficial do you think the information superhighway or NII will be in alleviating the following problems facing education today?

**PERCENTAGE RESPONDING DON'T KNOW (0), NO BENEFIT (1) OR LITTLE BENEFIT (2)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. overcrowding in the classrooms | 78 | 84 | 74 | 76 | 77 | 78 | 80 | 65 | 71 |
| b. lack of funds and equipment | 70 | 69 | 73 | 68 | 71 | 68 | 71 | 62 | 62 |
| c. security of persons/or school property | 82 | 90 | 80 | 84 | 81 | 80 | 79 | 66 | 64 |
| d. teenage pregnancy | 86 | 90 | 85 | 86 | 88 | 85 | 81 | 71 | 90 |
| e. gangs in school | 86 | 91 | 87 | 86 | 91 | 82 | 81 | 67 | 80 |
| f. undercompensation of teachers and administrators | 85 | 87 | 86 | 86 | 88 | 86 | 79 | 73 | 84 |
| g. **obsolescence of curriculum** | **11** | **14** | **11** | **11** | **15** | **15** | **21** | **4** | **3** |
| h. **lack of literacy skills of students** | **25** | **25** | **17** | **23** | **27** | **22** | **33** | **18** | **6** |
| i. lack of parental supervision of students | 85 | 89 | 82 | 87 | 88 | 85 | 81 | 63 | 67 |
| j. **lack of student motivation** | **19** | **16** | **13** | **20** | **20** | **19** | **29** | **10** | **6** |
| k. inflexibility of bureaucratic requirements | 69 | 69 | 67 | 71 | 71 | 70 | 69 | 39 | 64 |
| l. student truancy | 61 | 65 | 56 | 62 | 63 | 60 | 65 | 29 | 29 |
| m. too short of a school year | 71 | 74 | 65 | 72 | 70 | 70 | 76 | 55 | 32 |
| n. too much emphasis on test scores | 64 | 64 | 60 | 70 | 66 | 63 | 66 | 44 | 48 |
| o. too much emphasis on rote learning | 39 | 38 | 31 | 40 | 41 | 36 | 46 | 26 | 15 |



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## BENEFITS OF NII TO EDUCATION

Although the NII has been envisioned to have many beneficial effects on the educational sector, and although an overwhelming majority, between of 80% and 100% see it as having a beneficial effect on the general educational environment, nonetheless, an overwhelming majority of respondents across the eight educational organizations, as shown in Table 5, have a relatively narrow vision of the effects of the NII. Hence, they were pessimistic about the ability of the NII to alleviate particular problems in the education sector. For example, an overwhelming majority of respondents, between 63% to 89% across the 8 educational organizations, felt that the implementation of the NII in schools would have no effect or little effect on the lack of parental supervision, the security of persons or property, or overcrowding in

Chart 5. Benefits of the NII
Percentage Responding Some Benefit (3,4) Or Extremely Beneficial (5)

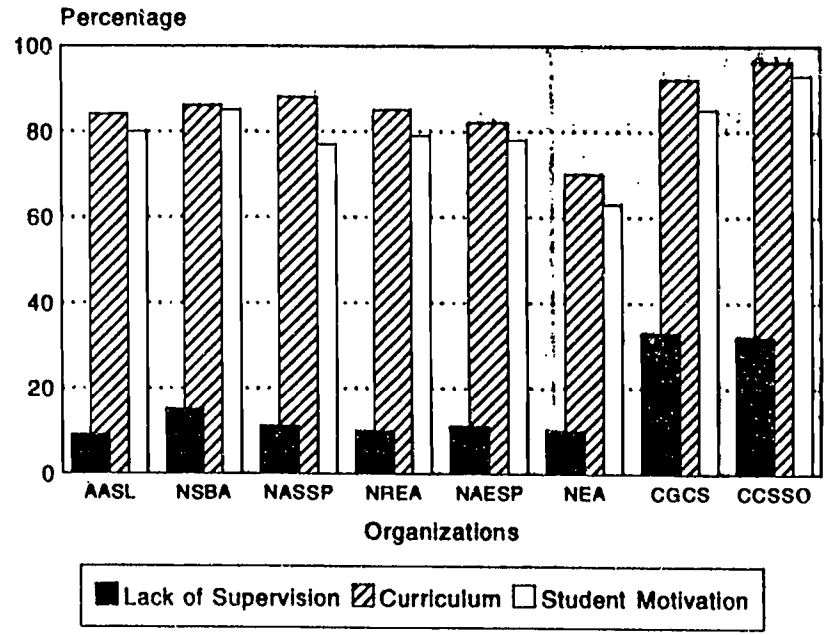



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TABLE 8

How will student learning be affected by the information superhighway or NII?

**PERCENTAGE RESPONDING POSITIVELY (4) OR VERY POSITIVELY (5)**

| | AVG | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| **a. the amount of resource material available to students will be expanded.** | **89** | **93** | **94** | **91** | **88** | **89** | **80** | **90** | **100** |
| b. greater emphasis will be placed on communication and collaborative learning | 77 | 83 | 84 | 76 | 79 | 76 | 62 | 86 | 87 |
| **c. there will be greater opportunities for independent investigation and research** | **89** | **92** | **91** | **91** | **93** | **89** | **78** | **90** | **100** |
| d. critical and analytical thinking will be increased | 73 | 80 | 78 | 75 | 73 | 75 | 57 | 82 | 87 |
| e. writing and language skills will be improved | 55 | 59 | 60 | 55 | 52 | 62 | 45 | 75 | 74 |
| f. focus and self-motivation will be increased | 64 | 69 | 72 | 64 | 61 | 67 | 51 | 75 | 87 |
| **g. more current resource material and real world information will be available** | **91** | **95** | **95** | **93** | **93** | **91** | **81** | **90** | **100** |
| h. collegiality and interaction of students with peers around the world will be possible | 84 | 90 | 89 | 82 | 81 | 84 | 74 | 88 | 100 |
| i. awareness of other cultures or alternative perspectives will be enhanced | 78 | 84 | 83 | 79 | 77 | 80 | 66 | 83 | 94 |
| j. there will be unrestricted access by students to all electronic material on the NII | 37 | 32 | 36 | 42 | 39 | 42 | 37 | 36 | 32 |


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the classrooms. However, a majority of respondents do see the NII as having a beneficial effect on the lack of literacy skills of students.

In addition, as Chart 5 illustrates, the overwhelming majority of respondents, between 60% and 95%, across the eight educational groups, did see the NII as having beneficial effects on the obsolescence of curriculum and on the lack of student motivation. The improvement in student motivation and skills (critical, analytical, language and computer skills) engendered by the NII is further reflected in Tables 7 and 8. Between 77% and 97% of respondents felt that the NII would have a beneficial or an extremely beneficial effect on the computer skills of students. In addition, between 78% and 100% of the respondents, across the eight educational organizations supported the popularly held notions that NII would have a positive or very positive effect on the amount of current resource material and real world information available to students, as well as provide greater opportunities for independent investigation and research.

**TABLE 7**

How beneficial or detrimental do you think the information superhighway or NII will be on the aspects of the educational environment listed below?

**PERCENTAGE RESPONDING BENEFICIAL (4) OR EXTREMELY BENEFICIAL (5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. the role of parents | 18 | 17 | 26 | 17 | 16 | 21 | 13 | 27 | 58 |
| **b. computer skills for students** | **88** | **94** | **93** | **88** | **89** | **88** | **77** | **93** | **97** |
| c. administrative tasks | 63 | 60 | 64 | 68 | 60 | 73 | 58 | 65 | 78 |
| d. critical thinking and problem solving | 75 | 85 | 83 | 77 | 75 | 76 | 61 | 86 | 94 |
| e. the overall curriculum | 74 | 79 | 81 | 78 | 73 | 74 | 59 | 78 | 94 |

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**TABLE 9**

From the list below, what are the five most likely outcomes of the implementation of the information superhighway or NII?

## PERCENTAGE RANKING OF THE FIVE MOST LIKELY OUTCOMES OF THE IMPLEMENTATION OF THE NII

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| **a. distance learning will be available to more students** | **83** | **89** | **85** | **84** | **82** | **85** | **72** | **78** | **88** |
| b. increased rapport and communication between students and teachers | 64 | 73 | 73 | 61 | 68 | 60 | 50 | 48 | 80 |
| c. greater involvement of parents in student's education | 21 | 17 | 27 | 22 | 22 | 25 | 17 | 31 | 48 |
| **d. revision of curriculum content to emphasize greater computer skills for students** | **84** | **89** | **83** | **82** | **79** | **87** | **84** | **77** | **58** |
| e. streamlining educational bureaucracy or reducing bureaucratic requirements | 28 | 21 | 24 | 29 | 28 | 34 | 37 | 24 | 19 |
| **f. increased access to information for educators** | **87** | **93** | **90** | **87** | **85** | **88** | **77** | **84** | **90** |
| **g. equalization of educational opportunities for economically disadvantaged or disabled students** | **72** | **78** | **72** | **72** | **70** | **72** | **67** | **80** | **77** |
| | | | | | | | | | |



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The benefits of the NII on student learning and in encouraging a revision in the curriculum is further highlighted in Table 9. When asked to rank the 5 most likely outcomes of the NII, between 58% and 89% across the eight educational organizations ranked, as would have been dictated by popularly held notions, the " revision of the curriculum content to emphasize computer skills" as one of their five most likely outcomes. Similarly, between 72% and 89%, and 77% to 93%, ranked the greater availability of distance learning to students, and increased access to information to educators, as one of the five most likely outcomes.

When the respondents' first 3 choices are considered, an overwhelming majority of respondents ranked access to information, distance learning and revision of curriculum as either their first, second or third

Chart 9. Outcomes to the Implementation of NII
Percentage of Respondents Ranking Access to Information, Distance Learning and Revision of Curriculum Either As First, Second or Third Choice

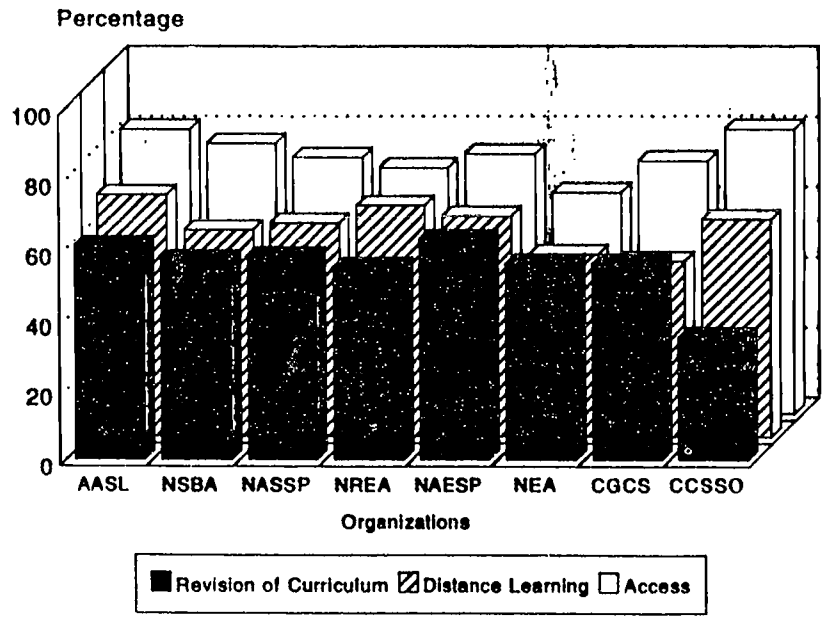


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**TABLE 9A-1**
What are the five most likely outcomes of the implementation of the information superhighway or NII?:

**DISTANCE LEARNING WILL BE MORE AVAILABLE TO STUDENTS**
**Percentage of Respondents Ranking Distance Learning as One of Top Three Likely Outcomes**
**(By Location of School and School Size)**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| **SCHOOL LOCALITY** | | | | | | |
| Rural | 77 | 77 | 73 | 78 | 76 | 69 |
| Suburban | 76 | 65 | 73 | 53 | 70 | 72 |
| Urban | 74 | 71 | 59 | 82 | 75 | 76 |
| **SCHOOL SIZE** | | | | | | |
| Small | 79 | 68 | 75 | 80 | 79 | 46 |
| Medium | 79 | 75 | 74 | 79 | 70 | 70 |
| Large | 72 | 68 | 66 | 73 | 73 | 77 |
| | | | | | | |



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choices, as shown in Chart 9. Also, between 67% and 80% of respondents, across the eight educational groups, ranked the equalization of educational opportunities for economically disadvantaged students as one of their five most likely outcomes.

Table 9A-1 explores the effects of school location and school size on the respondents who ranked distance learning as one of the top three likely outcomes. As the table suggests, in general, there are no significant differences in ranking by respondents from rural, suburban, or urban schools, or by respondents from small, medium or large schools, with the notable exception of the NEA. In the case of the NEA, a relatively smaller percentage of respondents, some 46%, from small schools ranked distance learning as one of the top three likely outcomes compared to respondents from small schools in

Chart 9-2 Outcomes of the NII
Percentage of Respondents Ranking Distance Learning as One of Top Three Outcomes
(By School Size)

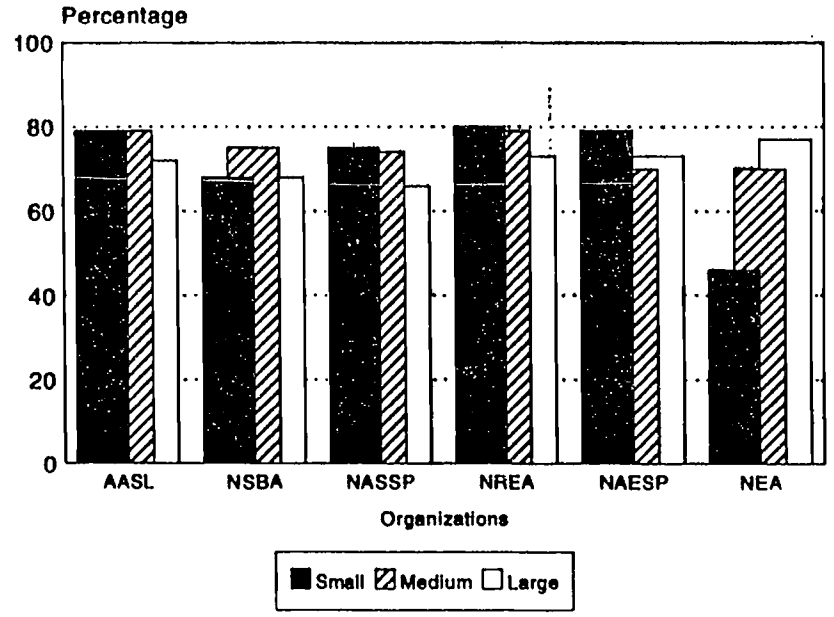



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**TABLE 9G-1**
What are the five most likely outcomes of the implementation of the information superhighway or NII?:

**EQUALIZATION OF EDUCATIONAL OPPORTUNITIES FOR ECONOMICAL DISADVANTAGED OR DISABLED STUDENTS**
**Percentage of Respondents Ranking Equalization of Opportunities as One of Top Three Likely Outcomes (By Location of School and School Size)**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| **SCHOOL LOCALITY** | | | | | | |
| Rural | 58 | 54 | 54 | 52 | 44 | 58 |
| Suburban | 48 | 55 | 47 | 52 | 52 | 52 |
| Urban | 60 | 56 | 59 | 57 | 65 | 64 |
| **SCHOOL SIZE** | | | | | | |
| Small | 55 | 66 | 59 | 54 | 51 | 55 |
| Medium | 52 | 57 | 48 | 44 | 55 | 61 |
| Large | 53 | 53 | 52 | 56 | 38 | 52 |
| | | | | | | |



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the other groups. This may again reflect a concern by teachers in smaller schools of the financial requirements to have access to distance learning capabilities.

Similarly, Table 9G-1 examines the effects of school size and location on respondents' ranking of the equalization of educational opportunities as one of the top three likely outcomes of the implementation of the NII. Here, as the table illustrates, there is no significant differences in ranking by respondents based on school size or school location.

Chart 9-3 Outcomes of the NII
Percentage Ranking Equalization of Educational Opportunities as One of Top Three Outcomes
(By School Location)

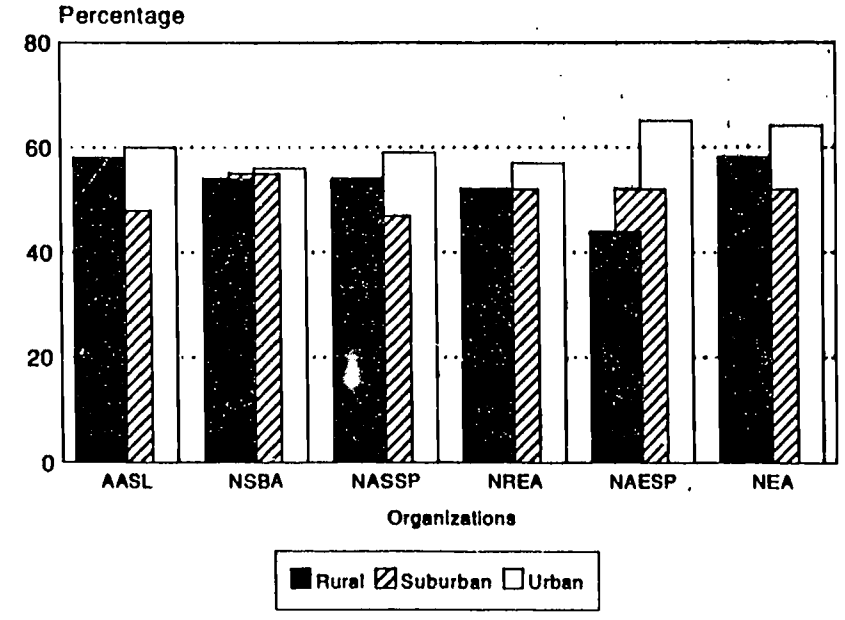



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**TABLE 10**

How would you rate the following potential effects of the NII and information technology on teaching?

**PERCENTAGE RESPONDING BENEFICIAL (4) OR EXTREMELY BENEFICIAL (5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. creation of electronic instructional resources | 74 | 72 | 82 | 82 | 72 | 78 | 62 | 90 | 91 |
| b. reduction in the use of traditional lecture method | 67 | 66 | 75 | 77 | 68 | 72 | 50 | 75 | 87 |
| c. access to a community of specialists | 82 | 89 | 84 | 82 | 81 | 84 | 72 | 92 | 90 |
| **d. change in the role of teacher from disseminator of information to coach and facilitator** | **77** | **84** | **85** | **83** | **77** | **82** | **57** | **79** | **91** |
| e. students' access to the best teachers, courses and schools regardless of geography | 72 | 77 | 76 | 73 | 69 | 76 | 60 | 71 | 87 |
| f. reduction in student truancy | 26 | 28 | 27 | 26 | 21 | 28 | 25 | 48 | 35 |
| **g. reduction in educational bureaucracy** | **23** | **26** | **21** | **23** | **19** | **24** | **25** | **23** | **20** |
| h. increased monitoring of student's assignments and homework | 48 | 51 | 46 | 48 | 42 | 53 | 49 | 50 | 64 |
| **i. greater communication and interaction with colleagues in your field** | **83** | **90** | **86** | **84** | **81** | **84** | **73** | **83** | **97** |
| j. enhanced professional development of teachers and administrators | 81 | 84 | 85 | 85 | 81 | 84 | 69 | 82 | 94 |
| k. promotion of societal respect for teachers within the community | 34 | 44 | 31 | 25 | 30 | 35 | 35 | 37 | 32 |


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With regards to teaching, between 81% and 92% of respondents rated access to a community of specialists as a beneficial or extremely beneficial effect of the NII, as shown in Table 10. Similarly, between 73% and 97% of the respondents saw a greater communication and interaction with colleagues in their fields as a beneficial or extremely beneficial effect of the NII.

It is interesting to note that a relatively smaller percentage of respondents from the National Education Association (teachers) see the creation of electronic instructional resources, the reduction in the use of the traditional lecture method and the change in the role of teacher from disseminator of information to coach and facilitator as beneficial or extremely beneficial compared with the other educational groups.

Chart 10. Potential Effects of the NII on Teaching
Percentage Responding Beneficial or Extremely Beneficial

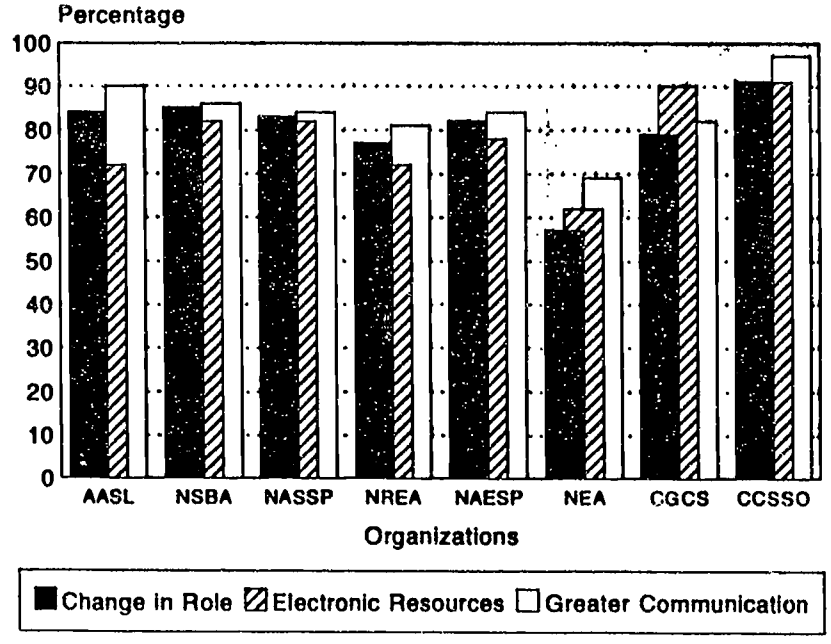


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TABLE 10-1

## PERCENTAGE FROM THE NEA RESPONDING BENEFICIAL (4) OR EXTREMELY BENEFICIAL (5) (BY LENGTH OF SERVICE IN THE EDUCATION SECTOR)

| | Number of Years in the Education Field | | | | |
|---|---|---|---|---|---|
| | 1-5 | 6-10 | 1-15 | 16-20 | above 20 |
| creation of electronic instructional resources | 76 | 73 | 71 | 77 | 69 |
| reduction in the use of traditional lecture method | 58 | 53 | 61 | 74 | 65 |
| change in the role of teacher from disseminator of information to coach and facilitator | 62 | 61 | 74 | 65 | 69 |



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Furthermore, as Table 10-1 illustrates, contrary to popular expectations, there isn't any significant differences in the responses to these issues by the respondents with different lengths of service in the education sector.

Chart 10-1
Potential Effects of the NII on Teaching
Percentage Responding Beneficial or Extremely Beneficial

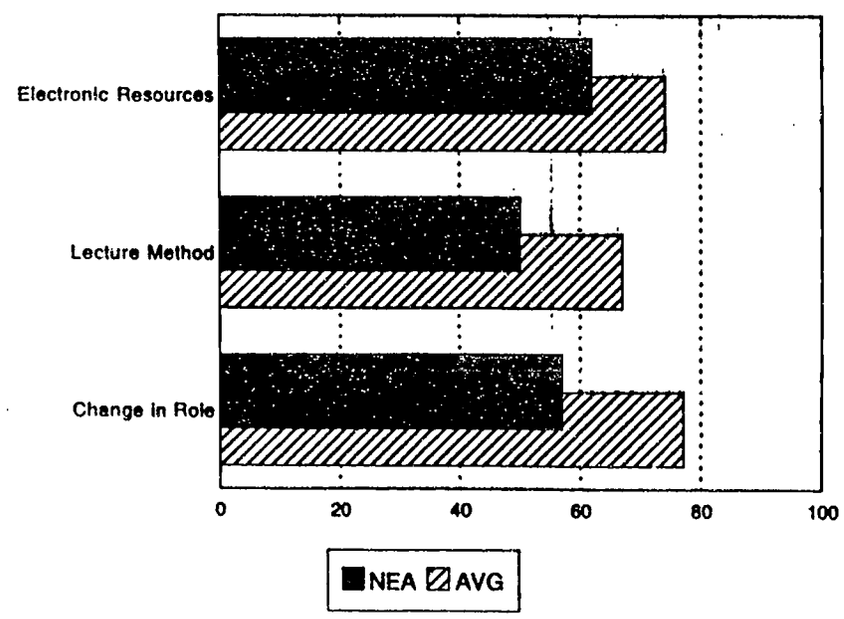


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**TABLE 11**

When the information superhighway or NII is implemented in schools, the benefits will be greater for:

**PERCENTAGE RESPONDING AGREE (4) OR STRONGLY AGREE (5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. schools in urban areas than schools in rural areas | 16 | 14 | 15 | 15 | 17 | 16 | 18 | 20 | 26 |
| b. schools in high crime areas than schools in low crime areas | 12 | 12 | 11 | 13 | 9 | 14 | 12 | 29 | 16 |
| c. more ethnically diverse schools than more ethnically homogeneous schools | 19 | 19 | 21 | 23 | 16 | 19 | 15 | 39 | 12 |
| d. schools with lower budgets per student than schools with higher budgets per student | 47 | 47 | 41 | 45 | 46 | 41 | 37 | 48 | 42 |
| e. disabled students/students with special needs than other students | 41 | 41 | 39 | 48 | 37 | 39 | 37 | 51 | 55 |
| f. economically disadvantaged students than students who are relatively better off | 44 | 44 | 41 | 45 | 41 | 41 | 39 | 44 | 55 |
| | | | | | | | | | |



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Table 11 shows that a majority of respondents view the NII as a means of equalizing the educational opportunities for economically disadvantaged students. Furthermore, as Charts 11A and 11B show, the majority of respondents feel that these benefits would be equally distributed. Thus, students in urban areas would benefit equally compared with those in rural areas, those in high crime areas would benefit equally compared to those in low crime areas, and students in ethnically diverse schools and homogeneous schools would benefit equally.

Table 11-1 explores the educators' responses on the issue that schools in urban areas would benefit more than schools in rural areas, based on the location of the respondent's school. As the table illustrates, there are no significant differences in responses from educators across their respective school locations. This reaffirms the

**Chart 11. Benefit of the NII**
**Percentage Responding Agree or Strongly Agree**
**Lower Budget Schools or Economically Disadvantaged Students Will Benefit More**

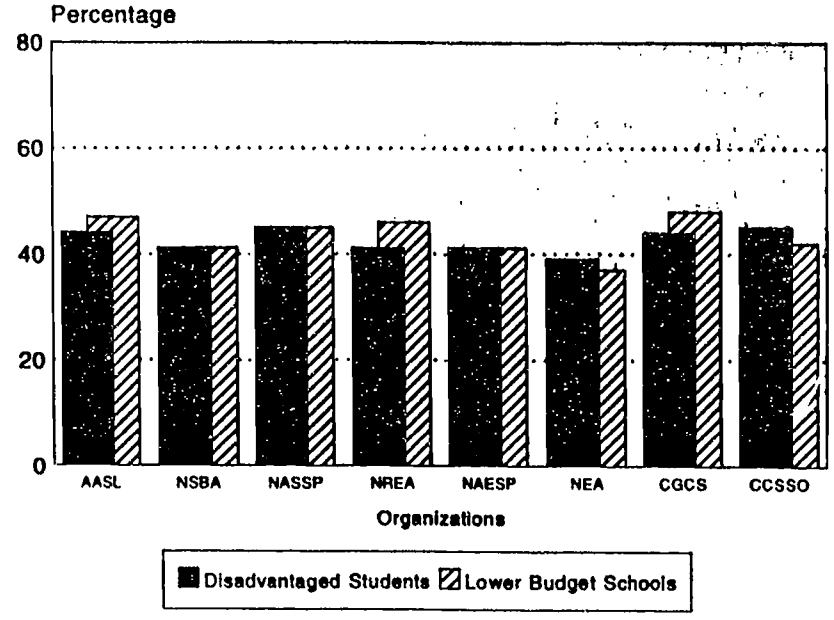



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Chart 11A. Benefits of NII to Education
Urban Schools will Benefit More than Rural Schools

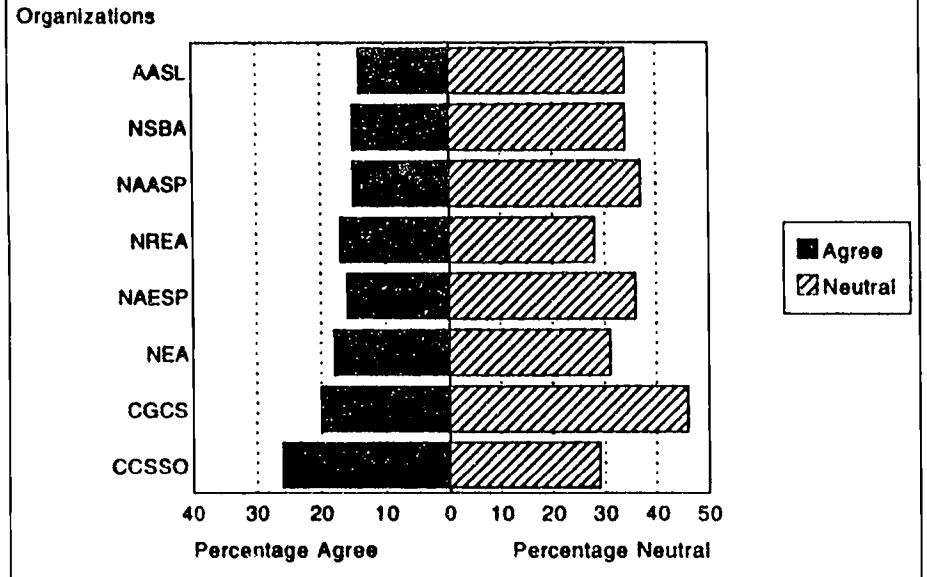
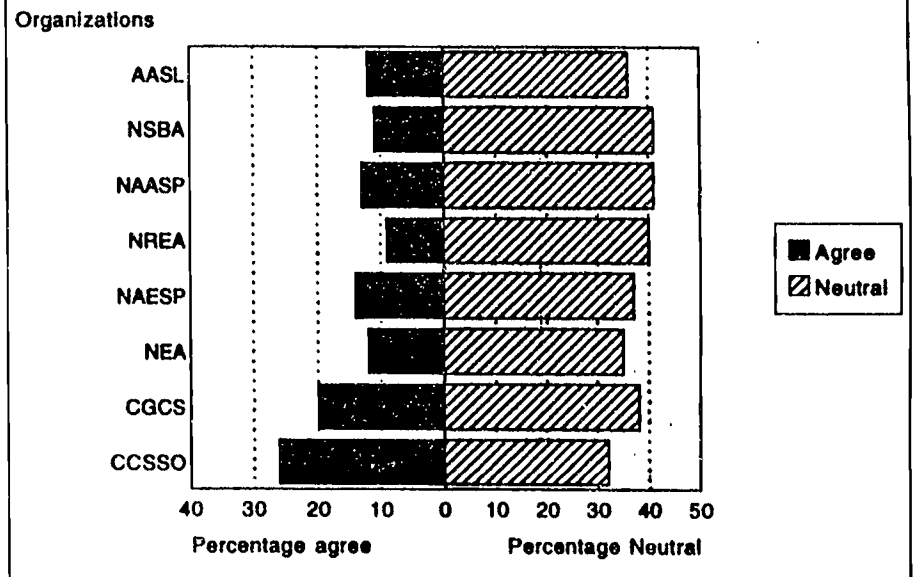



Chart 11B. Benefits of NII to Education
Schools in High Crime Areas Benefit More than Schools in Low Crime Areas



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location neutrality of the benefits of the NII.

It should be noted, however, that a large percentage of respondents, almost 50%, not surprisingly, agree or strongly agree that, schools with higher budgets would benefit more than schools with lower budgets.

**TABLE 11A-1 (LOCALITY)**
When the information superhighway or NII is implemented in schools, the benefits will be greater for:

**SCHOOLS IN URBAN AREAS THAN SCHOOLS IN RURAL AREAS**
**Percentage Distribution of Responses by Location of School**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| **PERCENTAGE AGREE** | | | | | | |
| Rural | 14 | 15 | 15 | 17 | 19 | 18 |
| Suburban | 14 | 14 | 15 | 9 | 15 | 20 |
| Urban | 18 | 17 | 19 | 33 | 15 | 20 |
| **PERCENTAGE DISAGREE** | | | | | | |
| Rural | 43 | 49 | 45 | 51 | 38 | 39 |
| Suburban | 39 | 37 | 38 | 39 | 31 | 30 |
| Urban | 36 | 49 | 45 | 51 | 38 | 39 |


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**TABLE 12**

To what extent do you agree or disagree that each of the following is a likely outcome of the effective implementation of the information superhighway or NII:

**PERCENTAGE RESPONDING AGREE (4) OR STRONGLY AGREE (5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. less in-class discussion | 23 | 18 | 18 | 25 | 23 | 24 | 31 | 17 | 9 |
| **b. commercialization of services offered to students** | **47** | **49** | **45** | **44** | **46** | **49** | **48** | **31** | **42** |
| c. shift of attention from other more crucial issues in education | 21 | 21 | 18 | 18 | 20 | 18 | 29 | 23 | 13 |
| d. overdependence on technology as a substitute for human interaction | 32 | 31 | 20 | 33 | 33 | 33 | 42 | 10 | 19 |
| **e. greater disparities in educational opportunities due to unequal availability and access to NII** | **59** | **63** | **57** | **60** | **62** | **59** | **56** | **48** | **45** |
| **f. unequal learning achievements of students caused by differences in students' technical skills** | **42** | **42** | **37** | **41** | **44** | **41** | **44** | **37** | **52** |
| g. trivialization of educational subjects by the over-reliance on technology for their presentation | 25 | 27 | 15 | 23 | 22 | 19 | 37 | 23 | 36 |
| h. reduction in the effectiveness of education caused by technology-facilitated larger classes. | 22 | 23 | 13 | 18 | 17 | 21 | 37 | 6 | 10 |



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In discussing the benefits of the NII to education, two major concerns of the educators become apparent. These concerns can be gleaned from Table 12. In the first instance, between 31% and 49% of respondents agreed or strongly agreed that the commercialization of services would be a likely outcome of the implementation of the NII. Secondly, between 45% and 63% of the respondents felt that greater disparities in educational opportunities because of unequal availability and access to the NII is a likely outcome of the implementation of the NII. This would suggest that, from the viewpoint of the respondents, the equalizing benefits of the NII are contingent upon equal access.

However, as Tables 12E-1 and 12E-2 show, this concern of greater disparities in educational opportunities due to unequal access is shared equally by respondents

Chart 12-1. Likely Outcomes of the NII
Percentage Responding Agree or Strongly Agree

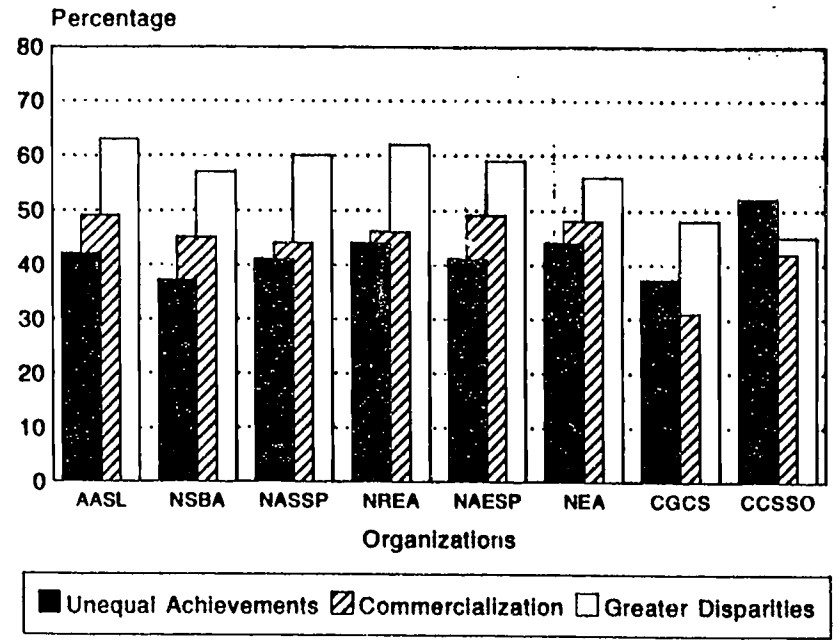



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**TABLE 12E-1 (REGIONAL)**

To what extent you agree or disagree that each of the following is a likely outcome of the effective implementation of the information superhighway or NII?

**GREATER DISPARITIES IN EDUCATIONAL OPPORTUNITIES DUE TO UNEQUAL ACCESS**

**Percentage within each region responding Agree (4) or Strongly Agree (5)**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| a. Mid-Atlantic (NY, NJ, PA) | 66 | 63 | 58 | 73 | 50 | 56 |
| b. Pacific (CA, OR, WA, AK, HI) | 50 | 48 | 71 | 66 | 81 | 64 |
| c. East North Central (OH, IN, IL, MI, WI) | 68 | 60 | 65 | 64 | 64 | 73 |
| d. New England (ME, MA, VT, NH, RI, CT) | 62 | 73 | 55 | 50 | 63 | 66 |
| e. South Atlantic (DE, MD, DC, VA, WV, NC, SC) | 64 | 56 | 61 | 70 | 59 | 65 |
| f. Mountain (MT, WY, CO, ID, NM, NV, AZ, UT) | 63 | 56 | 75 | 59 | 69 | 71 |
| g. West North Central (MN, IA, MO, ND, SD, NE, KS) | 68 | 63 | 64 | 65 | 61 | 61 |
| h. West South Central (AR, LA, OK, TX) | 68 | 55 | 63 | 56 | 71 | 76 |
| i. East South (KY, TN, AL, MS, GA, FL) | 58 | 50 | 48 | 43 | 47 | 62 |
| j. Other | 100 | 100 | 100 | 33 | 25 | 75 |
| | | | | | | |





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**TABLE 12E-2**

To what extent do you agree or disagree that each of the following is a likely outcome of the effective implementation of the information superhighway or NII?

## GREATER DISPARITIES IN EDUCATIONAL OPPORTUNITIES DUE TO UNEQUAL ACCESS

**Percentage Distribution of Responses by Location of School**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| **PERCENTAGE AGREE** | | | | | | |
| Rural | 63 | 65 | 62 | 61 | 62 | 59 |
| Suburban | 66 | 55 | 60 | 73 | 62 | 67 |
| Urban | 67 | 57 | 66 | 58 | 62 | 72 |
| **PERCENTAGE DISAGREE** | | | | | | |
| Rural | 12 | 14 | 16 | 13 | 13 | 10 |
| Suburban | 20 | 22 | 16 | 21 | 14 | 10 |
| Urban | 16 | 20 | 15 | 25 | 13 | 12 |


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**TABLE 12E-3**

To what extent do you agree or disagree that each of the following is a likely outcome of the effective implementation of the information superhighway or NII?

## GREATER DISPARITIES IN EDUCATIONAL OPPORTUNITIES DUE TO UNEQUAL ACCESS

**Percentage Distribution of Responses by Size of School**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| **PERCENTAGE AGREE** | | | | | | |
| Less than 400 Students | 74 | 65 | 65 | 66 | 62 | 74 |
| 400 to 800 Students | 66 | 73 | 58 | 63 | 61 | 62 |
| More than 800 Students | 62 | 54 | 64 | 60 | 65 | 66 |
| **PERCENTAGE DISAGREE** | | | | | | |
| Less than 400 Students | 9 | 12 | 13 | 11 | 7 | 8 |
| 400 to 800 Students | 15 | 10 | 16 | 12 | 16 | 12 |
| More than 800 Students | 16 | 22 | 17 | 15 | 13 | 15 |





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across the different geographical regions and across the different localities of schools, thus positing that the greater disparities in educational opportunities due to unequal access may not necessarily arise through the geographical location of schools or through the rural versus urban settings of schools.

However, as Table 12E-3 illustrates, a greater percentage of respondents from smaller schools from the AASL and NEA agree that greater disparities in educational opportunities will accrue due to unequal access. Concomitantly, a relatively smaller percentage of respondents from smaller schools, across the eight organizations, disagree with this proposition.

Also, between 37% and 51% of the respondents across the eight educational groups agree or strongly agree that unequal learning achievements would be a likely outcome of the NII.

Chart 12-2 Greater Disparaties Due to Unequal Access
Percentage of Responding Agree or Strongly Agree
(By School Size)

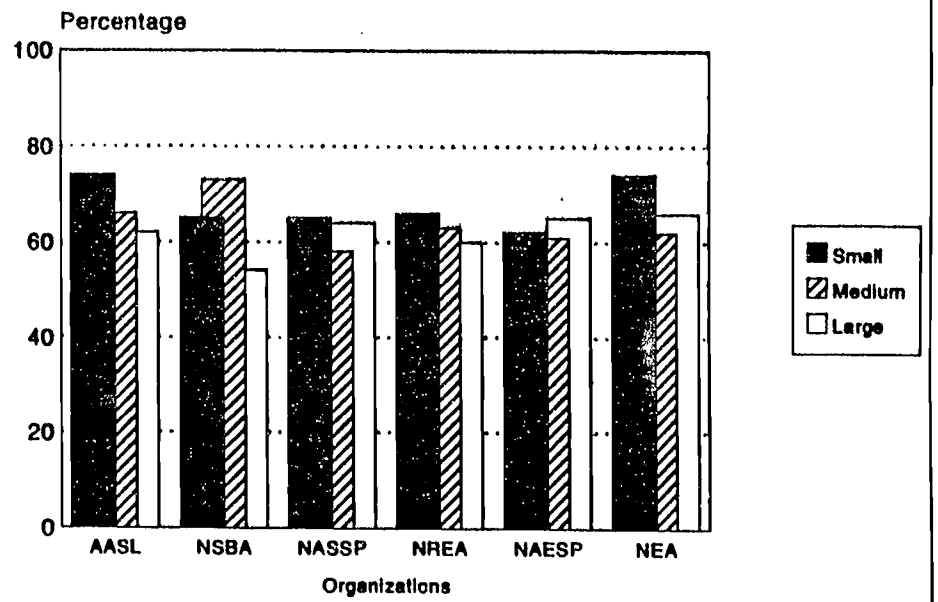



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TABLE 12-4

## PERCENTAGE FROM THE NEA RESPONDING AGREE (4) OR STRONGLY AGREE (5) (BY LENGTH OF SERVICE IN THE EDUCATION SECTOR)

| | Number of Years in the Education Field | | | | |
|---|---|---|---|---|---|
| | 1-5 | 6-10 | 1-15 | 16-20 | above 20 |
| less in class discussion | 32 | 31 | 38 | 33 | 37 |
| overdependence on technology as a substitute for human interaction | 42 | 54 | 49 | 48 | 51 |
| trivialization of education subjects by the over-reliance on technology for their presentation | 33 | 41 | 44 | 43 | 44 |
| reduction in the effectiveness of education caused by technology-facilitated larger classes | 32 | 42 | 52 | 48 | 42 |



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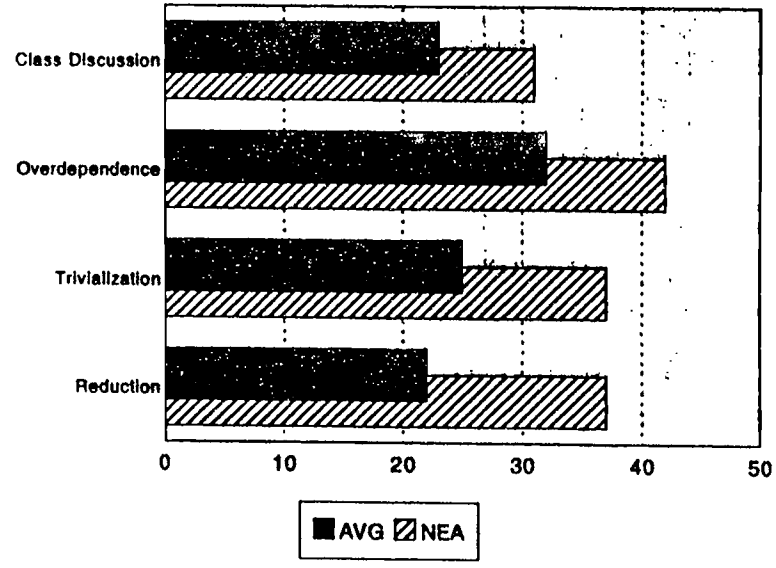
It is further interesting to note that a greater percentage of respondents from the NEA, relatively to the other educational organizations, agreed or strongly agreed that less in-class discussion, the overdependence on technology as a substitute for human interaction, the trivialization of educational subjects by the over-reliance on technology and the reduction of the effectiveness of education caused by technology-facilitated larger classes were likely outcomes of the effective implementation of the NII in schools. This is shown in Chart 12-3.

Furthermore, as Table 12-4 suggests, these concerns for less in-class discussion, the overdependence on technology, the trivialization of education subjects, and the reduction in effectiveness in education because of larger classes are shared, in general, by more respondents from the NEA with more than six years in the education field than those with less than six years experience.

Chart 12-3
Likely Outcomes of the NII
Percentage Responding Agree or Strongly Agree





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**BLE 13**

m the list below, which of the following are likely to impede the effective implementation of the information superhighway or NII in the education sector:

**PERCENTAGE RANKING OF ISSUES AS ONE OF THE TOP FIVE IMPEDIMENTS**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| **a. budgetary constraints** | **89** | **92** | **91** | **93** | **92** | **93** | **78** | **84** | **87** |
| b. security of persons/property | 10 | 11 | 9 | 11 | 7 | 8 | 13 | 19 | 15 |
| c. lack of student motivation to develop technical skills | 12 | 10 | 5 | 15 | 14 | 10 | 15 | 3 | 5 |
| d. student behavioral problems | 13 | 15 | 7 | 11 | 9 | 10 | 22 | 0 | 6 |
| **e. level of technical training/skills of teachers and administrators** | **79** | **84** | **85** | **84** | **80** | **82** | **64** | **77** | **86** |
| **f. insufficient equipment for students in the classroom** | **80** | **87** | **82** | **81** | **80** | **84** | **70** | **80** | **78** |
| g. lack of appropriate software programs/available material | 52 | 52 | 53 | 57 | 51 | 54 | 50 | 44 | 35 |
| h. lack of incentives/compensation for educators | 20 | 23 | 21 | 23 | 27 | 19 | 24 | 30 | 25 |
| i. conflicting perspectives between administrators and teachers on means to achieve educational objectives | 24 | 28 | 25 | 21 | 23 | 20 | 25 | 29 | 18 |
| j. aversion of teachers and administrators to technology as a learning tool | 46 | 48 | 57 | 45 | 51 | 53 | 28 | 38 | 39 |
| k. inflexibility of bureaucratic requirements for teachers and administrators | 26 | 23 | 28 | 26 | 30 | 29 | 25 | 20 | 35 |


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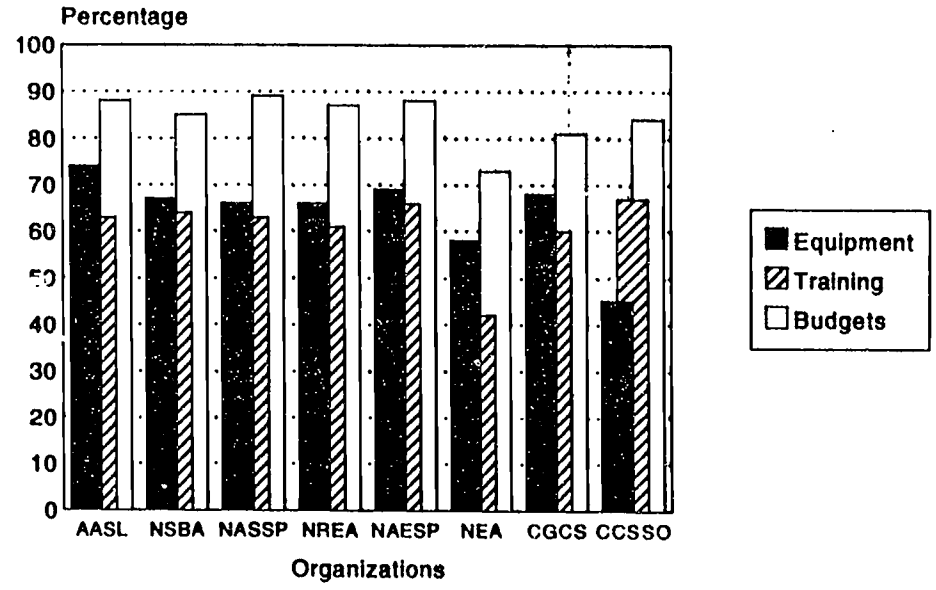
## IMPEDIMENTS TO THE IMPLEMENTATION OF THE NII IN SCHOOLS

The consistency and theme of the lack of funds and equipment as an important obstacle of the implementation of the NII in schools is echoed in Table 13. When asked to rank possible impediments to the implementation of the NII in schools, between 78% and 93%, and between 78% and 80% of the respondents across the eight educational groups ranked budgetary constraints and insufficient equipment for students in the classrooms as one of their top 5 impediments, respectively. In addition, between 64% and 86% of the respondents ranked level of technical training and skills of teachers as one of the top five impediments.

The importance of adequate funds, equipment and training of educators is further elucidated when the respondents' first three impediments are considered. As

Chart 13. Impediments to the Implementation of NII
Percentage of Respondents Ranking Training of Educators, Equipment and Budgets As Either First, Second or Third Choices

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## TABLE 14

The successful implementation and use of information technologies in schools will depend on:

**PERCENTAGE RESPONDING AGREE (4) OR STRONGLY AGREE (5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. reducing non-teaching requirements of teachers to facilitate the learning and deployment of information technology | 50 | 65 | 49 | 51 | 47 | 51 | 54 | 40 | 58 |
| b. restructuring of school curriculum to emphasize the role of electronic information and software tools | 75 | 76 | 83 | 78 | 77 | 73 | 62 | 79 | 87 |
| **c. providing adequate equipment in the classroom** | **92** | **94** | **93** | **96** | **94** | **92** | **82** | **90** | **100** |
| d. providing for the security of school equipment | 57 | 63 | 47 | 56 | 39 | 50 | 54 | 61 | 61 |
| **e. training educators on the use of and availability of information technology and its application to educators** | **91** | **94** | **93** | **95** | **93** | **93** | **81** | **89** | **100** |
| f. providing compensation for educators as incentives to learn, apply and utilize information technologies in education | 61 | 68 | 45 | 66 | 59 | 60 | 63 | 51 | 35 |
| g. increasing the computer literacy of students | 70 | 74 | 61 | 74 | 68 | 71 | 68 | 69 | 65 |
| **h. developing quality educational software and programs** | **76** | **77** | **74** | **78** | **76** | **80** | **74** | **67** | **78** |
| i. greater motivation on the part of students to learn uses of information technology | 50 | 50 | 44 | 56 | 45 | 50 | 56 | 38 | 58 |
| j. integrating applications of NII reform plans for education | 63 | 72 | 62 | 62 | 60 | 60 | 55 | 73 | 84 |
| k. increasing research on the education and training applications of current technologies | 64 | 65 | 64 | 68 | 64 | 66 | 55 | 71 | 83 |
| l. developing public and private partnerships to support information technology in education | 73 | 77 | 75 | 75 | 68 | 74 | 64 | 71 | 87 |
| **m. increasing school budgets for educator training and NII maintenance** | **88** | **92** | **87** | **92** | **89** | **89** | **78** | **89** | **100** |

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Chart 13 illustrates, between 40% and 90% of the respondents ranked these factors one of their top three impediments.

Correspondingly, and from an optimistic perspective, as the adequacy of funds, equipment and training have been seen as impediments to the implementation of the NII in schools, between 80% and 100% of respondents across the eight educational organizations, agreed or strongly agreed that the successful implementation of the NII then, necessarily will depend on sufficient equipment, increasing school budgets and the training of educators on the use of and availability of information technology. These results are shown in Table 14.

Furthermore, between 67% and 80% of respondents agreed or strongly agreed that the development of quality educational software and programs is important for the successful implementation of the NII in schools. A relatively smaller majority, between 45% to 65%, however agreed or strongly agreed that the reduction of non-teaching requirements of teachers to facilitate the learning and deployment of information technology was important for the successful implementation of the NII in schools.

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**TABLE 15**

What do you think are the five most important incentives that will accelerate the implementation and utilization of information technology in schools?

## PERCENTAGE RANKING OF THE TOP FIVE MOST IMPORTANT INCENTIVES

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. greater availability of on-line information | 32 | 30 | 35 | 39 | 34 | 26 | 27 | 26 | 35 |
| b. the development of educational network support | 46 | 53 | 52 | 45 | 47 | 45 | 35 | 49 | 51 |
| c. the establishment of pilot programs in select schools which will serve as technical models | 28 | 24 | 27 | 28 | 25 | 34 | 30 | 33 | 34 |
| d. making education technology a greater public priority | 55 | 55 | 59 | 55 | 61 | 56 | 43 | 68 | 74 |
| e. government grants/ subsidies to implement information technology in education. | 57 | 63 | 57 | 55 | 59 | 56 | 50 | 61 | 59 |
| **f. training of educators in the use of, availability and application of information technology.** | **80** | **87** | **80** | **80** | **80** | **79** | **73** | **81** | **87** |
| g. reduction in non-technical teaching requirements/workload of educators. | 29 | 35 | 24 | 23 | 24 | 27 | 37 | 12 | 16 |
| h. streamlining of the bureaucracy within the school district | 11 | 11 | 10 | 7 | 11 | 13 | 16 | 14 | 0 |
| i. greater availability and affordability of educational software programs. | 51 | 43 | 49 | 59 | 51 | 56 | 55 | 48 | 25 |
| **j. inexpensive access to telecommunications.** | **75** | **83** | **78** | **72** | **83** | **77** | **57** | **77** | **91** |



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Table 15 presents the rankings of respondents as to the five most important incentives that would accelerate the implementation and utilization of information technology in schools. Once again, the training of educators in the use of, availability and application of information technology was ranked by between 79% and 87% of the respondents, across the eight educational groups, as one of their top five incentives.

Furthermore, as Table 15 illustrates, between 52% and 91% of respondents also ranked inexpensive access to telecommunications as one of their top five incentives. This importance of training and inexpensive access can be seen in Chart 15 which considers the respondents top 3 incentives. Somewhat surprisingly perhaps, only between 24% and 34% of respondents ranked the establishment of pilot programs, in select schools, as one of their top five incentives.

Chart 15. Incentives to the Implementation of NII
Percentage of Respondents Ranking Training of Educators
And Inexpensiveness of Access As Either First, Second or Third Choices

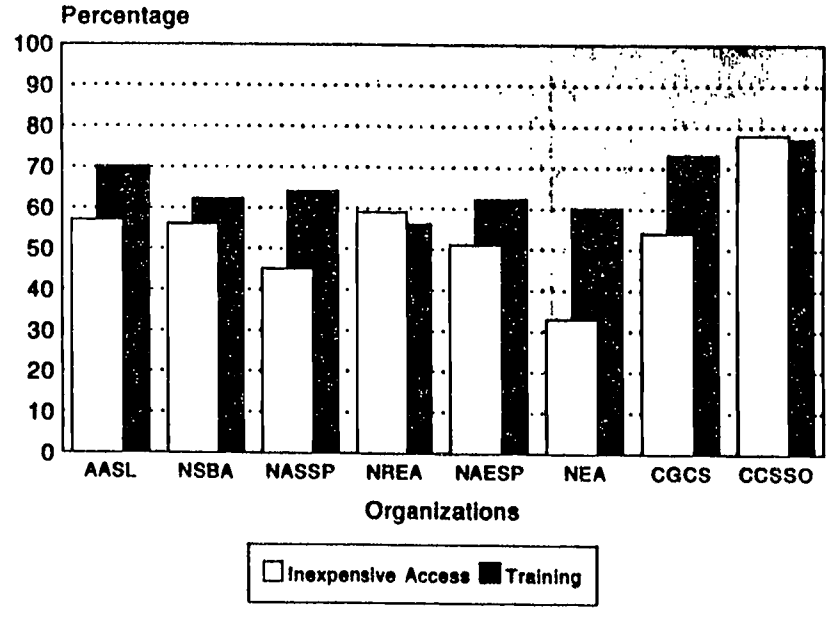



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**TABLE 17**

To what extent do you agree or disagree that the following are appropriate sources of funding for the information superhighway or NII?

**PERCENTAGE RESPONDING AGREE (4) OR STRONGLY AGREE (5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| **a. the streamlining of the bureaucracy within the school district/system** | **32** | **39** | **26** | **32** | **23** | **29** | **40** | **25** | **26** |
| b. greater reliance on the federal government for grants to enable implementation of the NII in schools | 51 | 53 | 53 | 53 | 51 | 49 | 48 | 62 | 58 |
| c. greater reliance on state and local government for grants to enable implementation of the NII in schools | 60 | 63 | 63 | 65 | 60 | 61 | 51 | 67 | 67 |
| **d. greater support from the corporate private sector** | **68** | **71** | **70** | **69** | **64** | **71** | **65** | **61** | **87** |
| **e. increase in tax rate specifically to fund information technology in education** | **37** | **37** | **45** | **41** | **41** | **38** | **20** | **59** | **58** |
| f. reallocation of existing funds from other outlays or sectors to information technology | 46 | 47 | 53 | 43 | 47 | 49 | 36 | 66 | 61 |




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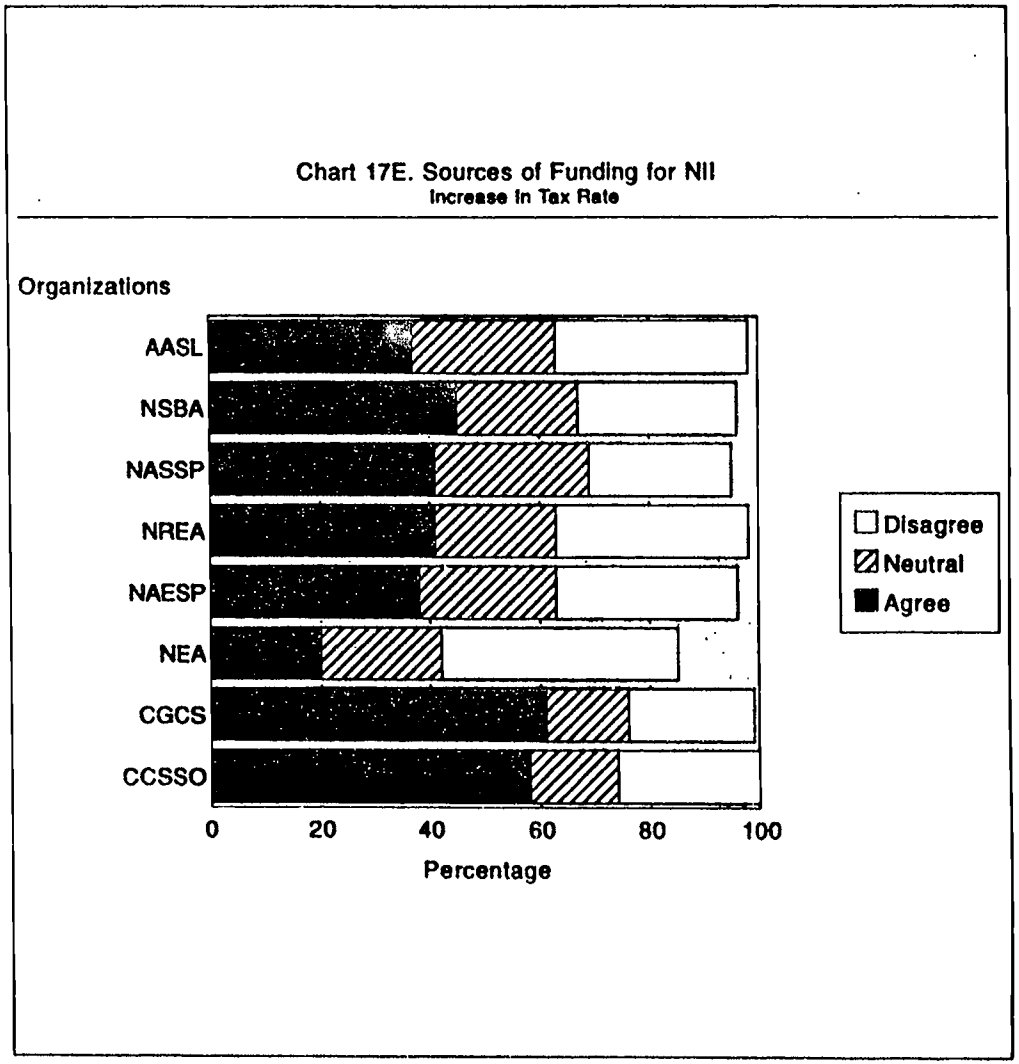
## FUNDING OF THE NII IN SCHOOLS

As the above analysis suggests, funding is an important issue for educators with regards to the implementation of the NII in schools. Table 17 displays several options as appropriate sources of funding. A large majority of respondents, across the eight organizations, between 64% and 87% agreed or strongly agreed that there should be greater support from the corporate private sector. As Table 17 shows, a majority of respondents also agreed that there should be a greater reliance on federal, state and local governments for grants. However, only between 20% and 59%, as shown in Chart 17E, agreed with an increase in the tax rate as a source of funding for the implementation of the NII in schools.

When examined regionally, as presented in

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## TABLE 17E (REGIONAL)

To what extent do you agree or disagree that each of the following are appropriate sources of funding for the information superhighway or NII?

### INCREASE IN TAX RATE SPECIFICALLY TO FUND INFORMATION TECHNOLOGY

**Percentage within each region responding Agree (4) or Strongly Agree (5)**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| a. Mid-Atlantic (NY, NJ, PA) | 27 | 32 | 27 | 31 | 31 | 19 |
| b. Pacific (CA, OR, WA, AK, HI) | 67 | 48 | 54 | 41 | 25 | 25 |
| c. East North Central (OH, IN, IL, MI, WI) | 40 | 44 | 49 | 51 | 49 | 16 |
| d. New England (ME, MA, VT, NH, RI, CT) | 41 | 46 | 46 | 56 | 38 | 49 |
| e. South Atlantic (DE, MD, DC, VA, WV, NC, SC) | 33 | 39 | 25 | 77 | 44 | 28 |
| f. Mountain (MT, WY, CO, ID, NM, NV, AZ, UT) | 48 | 54 | 34 | 39 | 35 | 30 |
| g. West North Central (MN, IA, MO, ND, SD, NE, KS) | 55 | 58 | 49 | 44 | 49 | 22 |
| h. West South Central (AR, LA, OK, TX) | 29 | 50 | 45 | 30 | 29 | 3 |
| i. East South (KY, TN, AL, MS, GA, FL) | 41 | 52 | 51 | 29 | 41 | 21 |
| j. Other | 33 | 100 | 100 | 0 | 25 | 50 |
| | | | | | | |



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Table 17E, a relatively smaller percentage of respondents in the Mid-Atlantic and West South Central regions, as compared with the other regions in the country, agreed or strongly agreed with an increase in the tax rate as an option to fund the implementation of the NII in schools.

In further addressing the issue of funding, respondents were provided with several alternatives as sources of access fees for schools to the NII. As shown in Table 18, between 53% and 77% agreed or strongly agreed that the local or federal government would be a source of funding for access.

**TABLE 18**

To what extent do you agree or disagree that each of the following is an appropriate funding source for access fees for schools and school district offices to the information superhighway or NII?

**PERCENTAGE RESPONDING AGREE (4) OR STRONGLY AGREE (5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. the federal government | 63 | 65 | 65 | 67 | 64 | 64 | 55 | 63 | 70 |
| b. the local government | 59 | 63 | 63 | 66 | 53 | 61 | 47 | 65 | 77 |
| c. schools should pay a portion with the local or federal government absorbing the rest | 46 | 52 | 50 | 48 | 48 | 44 | 34 | 46 | 68 |
| d. schools should absorb full cost | 3 | 3 | 3 | 3 | 3 | 5 | 2 | 6 | 6 |
| e. businesses | 39 | 39 | 40 | 36 | 34 | 41 | 42 | 50 | 62 |
| f. parents | 10 | 9 | 9 | 10 | 10 | 13 | 11 | 2 | 13 |
| g. telecommunication companies | 60 | 64 | 64 | 57 | 60 | 60 | 56 | 62 | 77 |


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## TABLE 18C-1 (REGIONAL)

To what extent do you agree or disagree that each of the following is an appropriate funding source for access fees for schools and school district offices to the information superhighway or NII?

### SCHOOLS SHOULD PAY A PORTION OF THE COST
**Percentage within each region responding Agree (4) or Strongly Agree (5)**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| a. Mid-Atlantic (NY, NJ, PA) | 55 | 48 | 49 | 45 | 44 | 41 |
| b. Pacific (CA, OR, WA, AK, HI) | 50 | 37 | 55 | 48 | 44 | 46 |
| c. East North Central (OH, IN, IL, MI, WI) | 59 | 63 | 51 | 61 | 57 | 41 |
| d. New England (ME, MA, VT, NH, RI, CT) | 56 | 73 | 62 | 69 | 38 | 40 |
| e. South Atlantic (DE, MD, DC, VA, WV, NC, SC) | 46 | 42 | 50 | 37 | 27 | 21 |
| f. Mountain (MT, WY, CO, ID, NM, NV, AZ, UT) | 64 | 58 | 33 | 41 | 43 | 44 |
| g. West North Central (MN, IA, MO, ND, SD, NE, KS) | 52 | 58 | 60 | 53 | 58 | 43 |
| h. West South Central (AR, LA, OK, TX) | 52 | 34 | 46 | 51 | 35 | 39 |
| i. East South (KY, TN, AL, MS, GA, FL) | 41 | 47 | 34 | 29 | 38 | 36 |
| j. Other | 33 | 100 | 0 | 0 | 50 | 25 |
| | | | | | | |





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An overwhelming majority was against the notion that schools or parents should absorb the full cost for access. However, between 56% and 77% of the respondents across the eight educational groups agreed or strongly agreed that telecommunications companies were an appropriate source of funding for access fees as compared with 39% and 62% who agreed or strongly agreed that businesses, in general, were appropriate sources.

Table 18 further shows that between 34% and 68% agreed that schools should pay a portion of the costs, with the local or federal governments absorbing the rest. Table 18C-1 shows the regional distribution of respondents agreeing or strongly agreeing with the proposition that schools should pay a portion of the cost for access. A relatively larger percentage of respondents in the East North Central, New England and West North Central regions agree that schools should absorb a portion of the cost, compared with the other regions.

However, in further examining the responses of the participants based on the location of schools, as shown in Table 18C-2, or by the size of schools, as shown in Table 18C-3, there are no significant differences in responses.

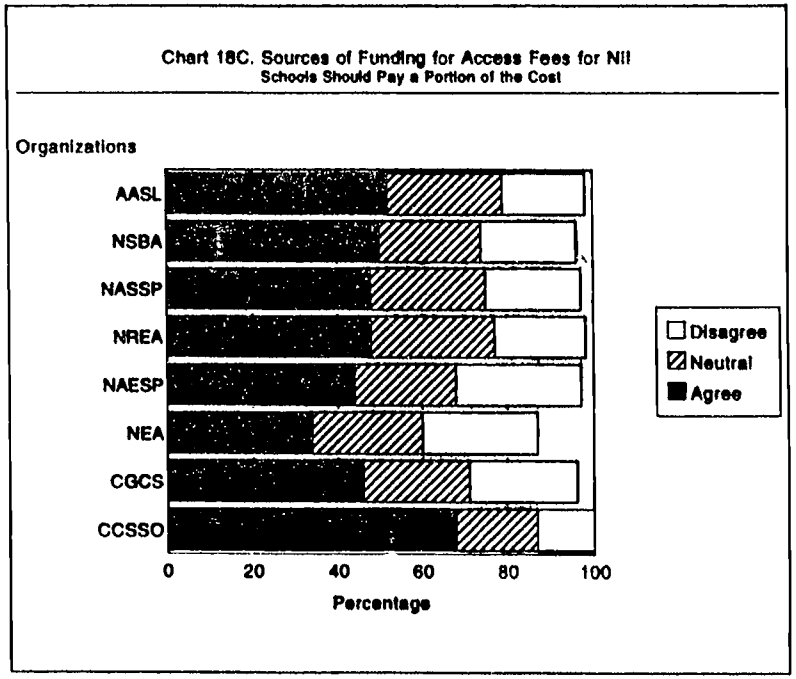


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TABLE 18C-2 (LOCALITY)

To what extent do you agree or disagree that each of the following is an appropriate funding source for access fees for schools and school district offices to the information superhighway or NII?

**SCHOOLS SHOULD PAY A PORTION OF THE COST**
**Percentage Distribution of Responses by Location of School**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| **PERCENTAGE AGREE** | | | | | | |
| Rural | 54 | 45 | 53 | 49 | 45 | 44 |
| Suburban | 54 | 57 | 48 | 61 | 45 | 40 |
| Urban | 52 | 51 | 47 | 17 | 48 | 35 |
| **PERCENTAGE DISAGREE** | | | | | | |
| Rural | 19 | 25 | 22 | 21 | 26 | 26 |
| Suburban | 17 | 21 | 22 | 24 | 32 | 30 |
| Urban | 26 | 25 | 29 | 42 | 30 | 38 |
| | | | | | | |





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**TABLE 18C-3 (SIZE)**
To what extent do you agree or disagree that each of the following is an appropriate funding source for access fees for schools and school district offices to the information superhighway or NII?

**SCHOOLS SHOULD PAY A PORTION OF THE COST**
**Percentage Distribution of Responses by Size of School**

| | AASL | NSBA | NASSP | NREA | NAESP | NEA |
|---|---|---|---|---|---|---|
| **PERCENTAGE AGREE** | | | | | | |
| Less than 400 students | 57 | 39 | 50 | 55 | 47 | 44 |
| 400-800 students | 53 | 51 | 50 | 41 | 45 | 38 |
| More than 800 students | 51 | 55 | 50 | 48 | 44 | 40 |
| **PERCENTAGE DISAGREE** | | | | | | |
| Less than 400 students | 17 | 29 | 26 | 19 | 26 | 31 |
| 400-800 students | 20 | 29 | 22 | 22 | 30 | 30 |
| More than 800 students | 19 | 20 | 23 | 24 | 37 | 32 |
| | | | | | | |


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**TABLE 19**

From the list below, what are the five most important reasons for building the information superhighway or NII?

**PERCENTAGE RANKING OF THE FIVE MOST IMPORTANT REASONS FOR BUILDING THE NII**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| **a. research and innovation** | **81** | **91** | **77** | **86** | **80** | **83** | **73** | **70** | **90** |
| b. increase business efficiency | 45 | 44 | 51 | 49 | 49 | 43 | 41 | 35 | 31 |
| c. national health and safety | 18 | 21 | 17 | 17 | 20 | 14 | 16 | 27 | 34 |
| d. international competitiveness | 57 | 54 | 64 | 62 | 60 | 58 | 47 | 70 | 59 |
| e. entertainment | 9 | 10 | 10 | 8 | 8 | 10 | 9 | 8 | 3 |
| **f. education and culture** | **83** | **89** | **87** | **86** | **85** | **83** | **73** | **91** | **100** |
| g. national security | 11 | 10 | 11 | 10 | 11 | 13 | 11 | 10 | 16 |
| **h. better informed citizenry** | **73** | **81** | **76** | **77** | **74** | **73** | **61** | **77** | **84** |
| i. increased government efficiency and streamlined bureaucracy | 25 | 26 | 27 | 21 | 25 | 24 | 25 | 37 | 28 |
| j. environmental benefits (telecommuting, environmental monitoring | 27 | 33 | 23 | 24 | 23 | 27 | 27 | 31 | 25 |
| k. job creation | 26 | 20 | 19 | 28 | 31 | 28 | 30 | 22 | 26 |
| l. the national information highway should not be built at all | 2 | 0 | 0 | 2 | 3 | 4 | 3 | 0 | 0 |





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## ROLE OF GOVERNMENT AND PRIVATE SECTOR

A review of the above analysis suggests that the majority of respondents see the federal and local governments, and to some extent, the corporate private sector, as sources of funding for implementation of the NII in schools. The role of the government in the implementation of the NII is heightened by the fact that a majority of the respondents see the NII as contributing to the national social good. As illustrated in Table 19, when asked to rank the five most important reasons for building the NII, between 73% and 100% of the respondents across the eight educational groups ranked education and culture as one of the top five reasons. Similarly, between 73% and 91%, and 73% and 84% ranked research and innovation, and better informed

Chart 19. Reasons for Building the NII
Percentage of Respondents Ranking Better Informed Citizenry, Research and Innovation, and Education and Culture As First, Second or Third Choices

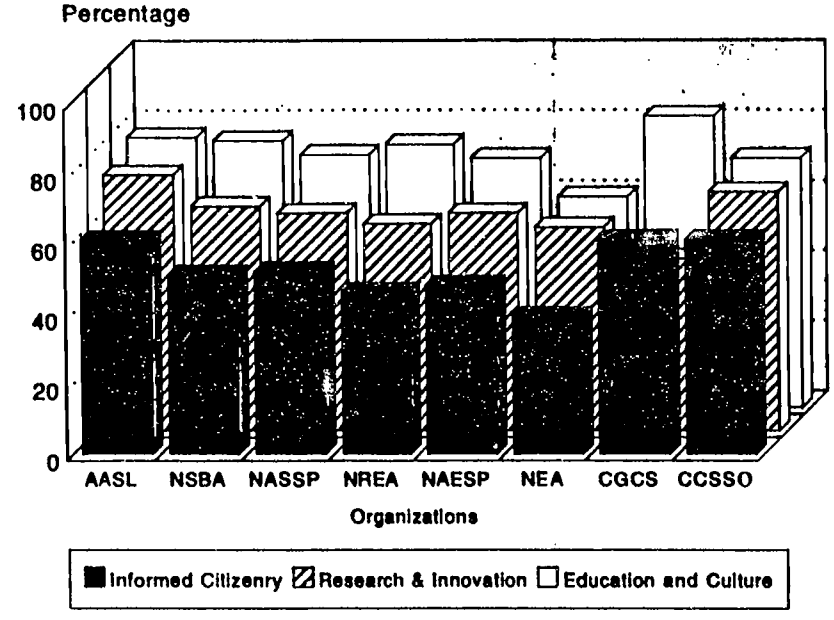


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**TABLE 21**

To what extent do you agree or disagree with the following statements regarding the involvement of the government and private sector in the information superhighway or NII?

**PERCENT RESPONDING AGREE (4) TO STRONGLY AGREE (5)**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| **a. only the government should invest in and build the information superhighway or NII.** | **6** | **6** | **7** | **7** | **8** | **5** | **5** | **8** | **0** |
| **b. only the private sector should invest in and build the information superhighway or NII.** | **5** | **3** | **4** | **6** | **7** | **5** | **8** | **4** | **3** |
| c. private sector should develop computer programs and software. | 53 | 58 | 61 | 55 | 55 | 52 | 42 | 58 | 64 |
| **d. government should ensure equitable access and intellectual freedom of all users of the NII.** | **77** | **87** | **80** | **78** | **75** | **73** | **64** | **80** | **94** |
| e. government should provide incentives to industry to speed up the process of digitizing information and developing educational software | 63 | 61 | 69 | 71 | 64 | 56 | 59 | 73 | 74 |
| f. government should protect the rights and information needs of the educational sector from commercialization. | 69 | 80 | 69 | 69 | 68 | 65 | 60 | 77 | 77 |
| g. government should work with business and the education sector to develop a vision for the information superhighway or NII | 83 | 91 | 88 | 86 | 85 | 80 | 68 | 81 | 96 |



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citizenry as one of the top five reasons to build the NII, respectively. When the respondents' first three choices are considered, as shown in Chart 19, the preeminence of education and culture, better informed citizenry and research and innovation as important reasons for building the NII can be appreciated.

Furthermore, Table 21 suggests several other roles that the government, and the corporate private sector, could play in the implementation of the NII.

In the first instance, a very small percentage of respondents, between 3% and 8%, across the eight educational groups, agree or strongly agree that the government or the private sector solely, respectively, should invest in and build the NII, with the majority disagreeing with the proposition. However, between 68% and 96% of the respondents agreed or strongly agreed

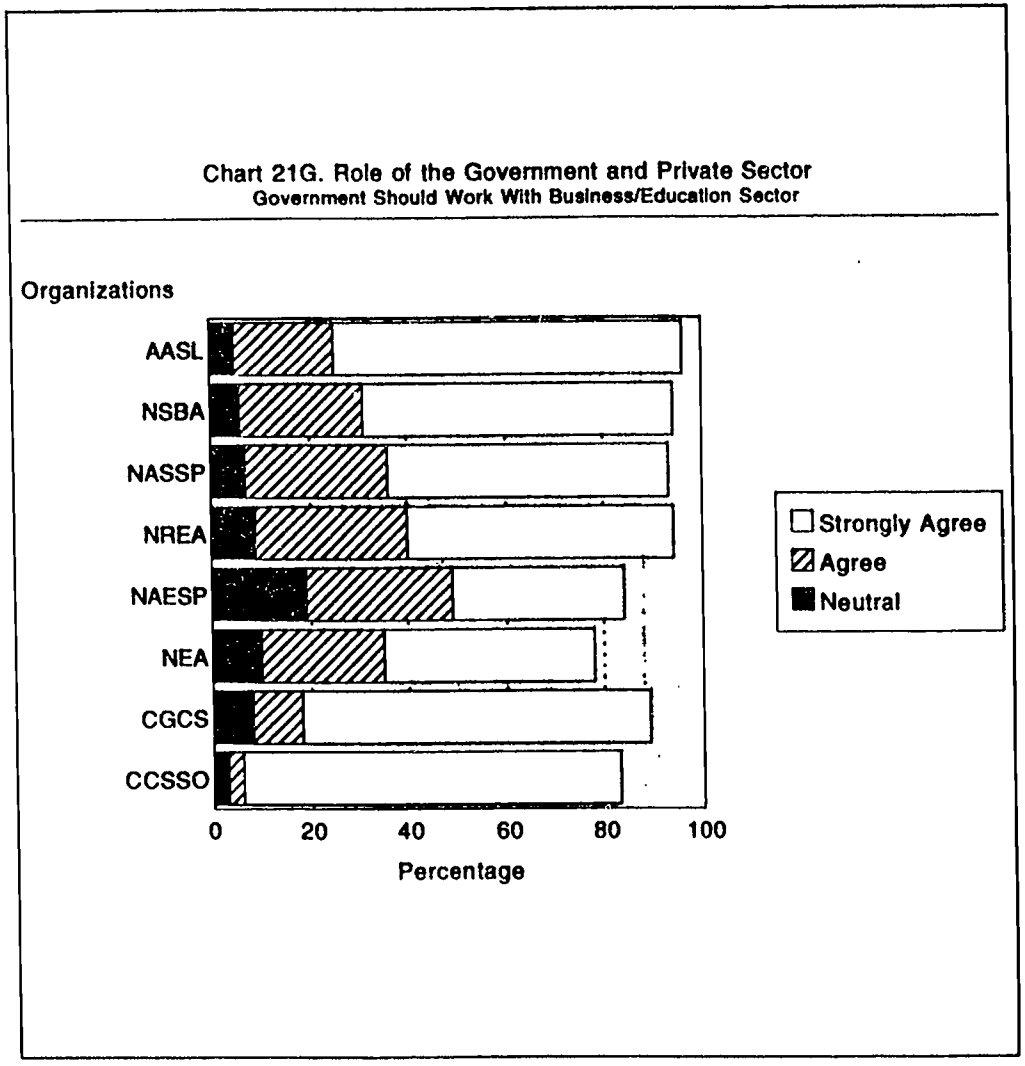



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Chart 21E. Role of the Government
Government Should Provide Incentives To Speed Up Digitization

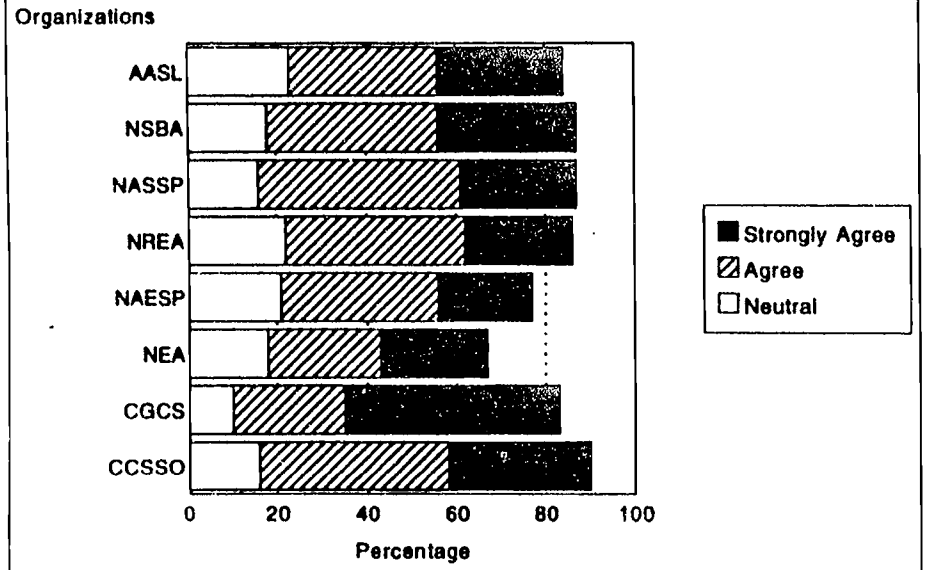
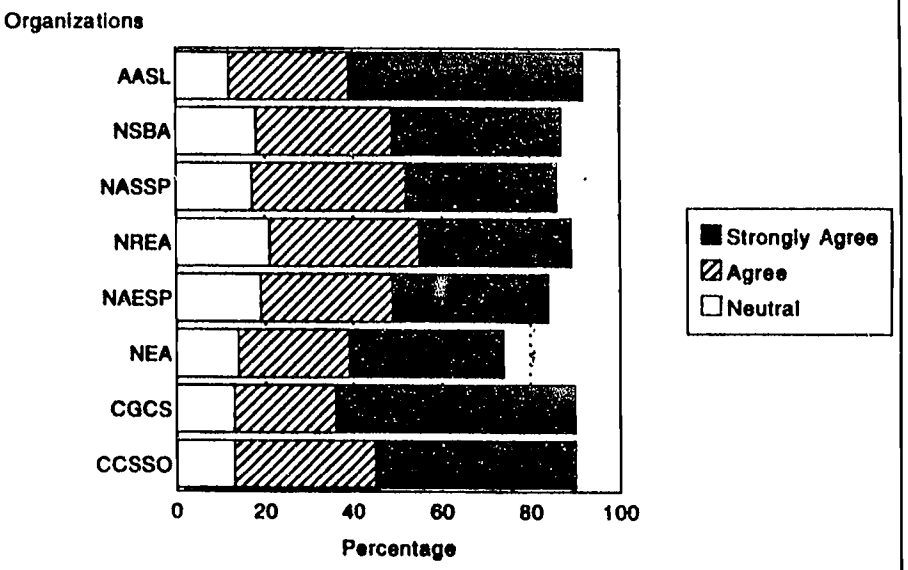



Chart 21F. Role of the Government
Government Should Protect Rights and Information Needs From Commercialization



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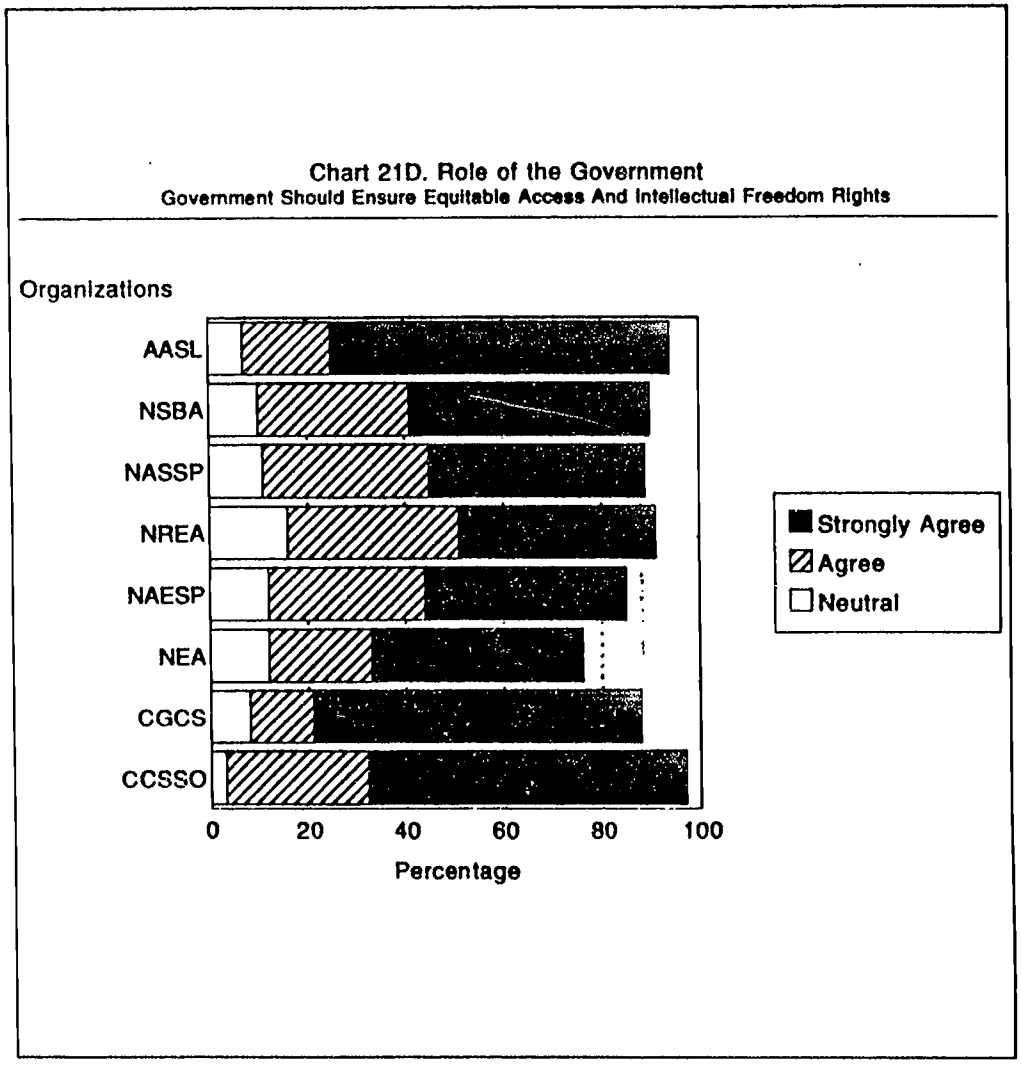
that government should work with business and the education sector to develop a vision for the NII. This argues strongly in favor of the notion that the building of the NII, and particularly with regard to its implementation in schools, should be a collaborative effort between government, both local and federal, the corporate private sector and the education community.

Secondly, a large majority of respondents, between 64% and 94% across the eight educational groups, agreed or strongly agreed that government should ensure equitable access and intellectual freedom of all users of the NII.

Finally, between 60% and 80% of the respondents across the eight educational groups, agreed that government should protect the rights and information needs of the educational sector from commercialization.





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## CONCLUSIONS

It is clear from this study, that educators see the NII and information technologies as having a beneficial effect on student learning and teaching. These benefits would include the revision in curriculum content, increased computer skills for students, increased student motivation and increased access to information, scholars and experts for educators. Most of the educators see these benefits being equally distributed to all students and schools, irrespective of geographical region, school location or school size, provided there is equal access. The results suggest that the educators, who are broadly representative of all segments in the profession and, to a lesser extent, of American society, see the issue of equal access primarily as a financial issue, and not a matter of class, ethnicity, geographical location, or other social factors.

This issue of finance, not only in terms of attaining equal access, but also in terms of acquiring appropriate equipment, is crucial. Schools are ill-equipped at present, as this survey shows, to attain the greatest benefits that the NII and information technologies have to offer, even if the NII is fully established in the near future.

However, this study also demonstrates that, as in other user communities, educators cannot fully appreciate either the availability or the benefits and costs of particular information technology applications as an abstract matter. Experience in using these technologies is a condition for appreciating and extracting their full potential. Thus, the training of educators, in this respect, is also crucial. For even if the financial constraints are removed, the successful use of information technologies in schools will reside in the



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educators' efficient and appropriate use of such technologies. It is here that the corporate private sector can aid, most judiciously, in expediting the implementation of information technologies in schools through the dissemination of information and applications available, such as through demonstration projects, and through educator training.

In addition to the question of how educational applications of the NII will be financed, two policy guidelines emerge from this research. First, given that all key players see financing as an issue indicates that a more rigorous understanding of both costs and benefits will precede major commitments by many of them. This will include intangible and difficult-to-measure variables on both sides of the equation, such as the potential cost of a technology-driven (as opposed to a student need driven) educational environment, or benefits which could be realized unevenly across social groups, if, as this study has shown, the precursors are ignored . Second, it is clear that implementation of K-12 applications of the NII will need to proceed forward in a balanced way that addresses the variety of concerns raised by the respondents around issues such as access and training. Policies which disregard these concerns will encounter opposition and resistance, and even if passed, are likely to achieve sub-optimal results. On both matters, further research can be an important guide to policy development and technology implementation

Ultimately, however, the successful implementation and use of information technology in schools demands, as echoed in the results of this study, a collaborative effort between the federal and state governments, and through the local community of educators and education groups, private corporations and parents.

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# APPENDIX A
# DEMOGRAPHICS





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## DEMOGRAPHICS

What equipment/capabilities do you currently have in your home?

### PERCENTAGE RESPONDING POSITIVELY

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. personal computer | 77 | 83 | 86 | 76 | 72 | 76 | 68 | 90 | 93 |
| b. networked personal computer | 9 | 8 | 12 | 7 | 6 | 9 | 8 | 19 | 19 |
| c. telephone | 93 | 95 | 93 | 91 | 92 | 93 | 92 | 92 | 90 |
| d. FAX | 22 | 24 | 30 | 19 | 20 | 21 | 14 | 48 | 39 |
| e. TV Monitor | 87 | 95 | 90 | 87 | 87 | 87 | 75 | 85 | 94 |
| f. VCR | 96 | 98 | 95 | 96 | 96 | 97 | 95 | 92 | 97 |
| g. cable/satellite T.V. | 72 | 72 | 74 | 73 | 75 | 72 | 67 | 79 | 71 |
| h. optical disc technology | 25 | 26 | 35 | 21 | 22 | 21 | 19 | 54 | 45 |
| i. commercial on-line databases or Internet | 27 | 38 | 42 | 19 | 18 | 19 | 17 | 69 | 65 |
| j. video transmission/distance learning | 0.6 | 0.1 | 2 | 0.1 | 0.1 | 1 | 1 | 0 | 0 |
| k. voice mail or telephone answering machine | 53 | 65 | 64 | 45 | 39 | 47 | 47 | 81 | 87 |
| l. e-mail | 23 | 35 | 37 | 14 | 17 | 14 | 13 | 56 | 65 |

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## DEMOGRAPHICS

### PERCENTAGE RESPONDING

| | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|
| **What is the size of your school?** | | | | | | | | |
| Less than 400 students | 14 | 10 | 21 | 32 | 32 | 13 | 0 | 0 |
| Between 400 and 800 students | 41 | 17 | 34 | 22 | 53 | 48 | 2 | 14 |
| more than 800 students | 43 | 67 | 44 | 43 | 13 | 36 | 84 | 55 |
| **In what type of community is your school located?** | | | | | | | | |
| Rural | 22 | 25 | 45 | 87 | 37 | 31 | 0 | 23 |
| Suburban | 54 | 51 | 35 | 7 | 44 | 45 | 0 | 18 |
| Urban | 21 | 21 | 18 | 3 | 18 | 21 | 89 | 32 |
| **What is the major group in your school?** | | | | | | | | |
| Majority are Caucasians | 81 | 81 | 87 | 88 | 82 | 73 | 20 | 55 |
| Majority are African American | 6 | 7 | 4 | 2 | 6 | 7 | 36 | 0 |
| Majority are Hispanics | 5 | 4 | 5 | 4 | 4 | 7 | 14 | 9 |
| Majority are Asians or Pacific Islanders | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 5 |
| Majority are Native Americans or Alaskans | 0 | 1 | 1 | 3 | 2 | 1 | 0 | 0 |
| No single ethnic group constitutes a majority | 6 | 5 | 3 | 2 | 5 | 10 | 16 | 9 |



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## EMOGRAPHICS

### PERCENTAGE RESPONDING

| | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|
| **How long have you worked in the education field?** | | | | | | | | |
| 1- 5 years | 5 | 6 | 1 | 2 | 1 | 8 | 2 | 0 |
| 6-10 years | 9 | 5 | 3 | 4 | 2 | 13 | 0 | 0 |
| 11-15 years | 13 | 8 | 9 | 7 | 10 | 13 | 10 | 13 |
| 16-20 years | 21 | 20 | 14 | 15 | 19 | 18 | 17 | 23 |
| more than 20 years | 52 | 59 | 72 | 71 | 68 | 46 | 63 | 61 |
| **What is your gender?** | | | | | | | | |
| Male | 7 | 63 | 72 | 80 | 51 | 25 | 44 | 45 |
| Female | 92 | 35 | 22 | 19 | 46 | 71 | 48 | 48 |
| **What is your ethnic Background?** | | | | | | | | |
| Caucasian | 95 | 94 | 94 | 97 | 92 | 87 | 71 | 65 |
| African American | 3 | 2 | 3 | 0 | 4 | 5 | 15 | 13 |
| Other | 2 | 1 | 2 | 2 | 3 | 4 | 8 | 19 |
| **What is your highest educational level you have achieved?** | | | | | | | | |
| Less than a bachelor's degree | 0.3 | 3 | 0.1 | 0.2 | 0.2 | 0.01 | 6 | 0 |
| Bachelor's degree or equivalent | 0.3 | 4 | 1 | 2 | 0 | 8 | 0 | 0 |
| Some graduate education | 6 | 8 | 2 | 5 | 4 | 30 | 6 | 16 |
| Master's degree | 82 | 51 | 67 | 51 | 65 | 54 | 50 | 48 |
| Ph.D, Ed. D, or equivalent | 7 | 25 | 20 | 30 | 20 | 8 | 27 | 29 |
| Other (CAS, CAGS, Ed. Specialist) | 5 | 7 | 10 | 12 | 10 | 6 | 2 | 3 |

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## REGIONAL DISTRIBUTION

In which region of the country is your school located?

**Percentage Distribution of Schools Within Each Region**

| | avg | AASL | NSBA | NASSP | NREA | NAESP | NEA | CGCS | CCSSO |
|---|---|---|---|---|---|---|---|---|---|
| a. Mid-Atlantic (NY, NJ, PA) | 13 | 16 | 12 | 14 | 9 | 15 | 12 | 13 | 10 |
| b. Pacific (CA, OR, WA, AK, HI) | 10 | 1 | 12 | 11 | 15 | 9 | 18 | 8 | 16 |
| c. East North Central (OH, IN, IL, MI, WI) | 19 | 21 | 26 | 19 | 13 | 19 | 19 | 14 | 10 |
| d. New England (ME, MA, VT, NH, RI, CT) | 6 | 9 | 2 | 7 | 3 | 7 | 7 | 4 | 10 |
| e. South Atlantic (DE, MD, DC, VA, WV, NC, SC) | 9 | 14 | 8 | 7 | 4 | 9 | 8 | 8 | 16 |
| f. Mountain (MT, WY, CO, ID, NM, NV, AZ, UT) | 8 | 7 | 6 | 8 | 9 | 11 | 8 | 10 | 13 |
| g. West North Central (MN, IA, MO, ND, SD, NE, KS) | 16 | 10 | 18 | 16 | 30 | 15 | 10 | 17 | 10 |
| h. West South Central (AR, LA, OK, TX) | 9 | 10 | 7 | 6 | 9 | 4 | 5 | 10 | 10 |
| i. East South (KY, TN, AL, MS, GA, FL) | 10 | 11 | 8 | 10 | 6 | 10 | 12 | 8 | 3 |
| j. Other | 0.5 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 6 |
| **TOTAL** | | 672 | 448 | 482 | 468 | 383 | 613 | 48 | 31 |



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# APPENDIX B
# SURVEY QUESTIONNAIRE

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# SURVEY ON THE NATIONAL INFORMATION INFRASTRUCTURE: TOWARDS LINKING BOTH SIDES OF THE DESK

Conducted by the Center for Telecommunications Management at the University of Southern California

**Marking Instructions**

Use a No. 2 pencil only
Fill in circles completely.
Do not make any stray marks

Incorrect Marks ⊘ ⊗ ◒ ⊙ Correct Mark ●

## PROBLEMS IN EDUCATION

**This question seeks to elicit your views on the general problems in education.**

**1. How would you rate the following problems facing education today?**

| | | Don't Know | Not At All Serious | | | | Extremely Serious |
|---|---|---|---|---|---|---|---|
| a) | overcrowding in the classrooms | 0 | 1 | 2 | 3 | 4 | 5 |
| b) | lack of funds and equipment | 0 | 1 | 2 | 3 | 4 | 5 |
| c) | security of persons/or school property | 0 | 1 | 2 | 3 | 4 | 5 |
| d) | teenage pregnancy | 0 | 1 | 2 | 3 | 4 | 5 |
| e) | gangs in schools | 0 | 1 | 2 | 3 | 4 | 5 |
| f) | undercompensation of teachers and administrators | 0 | 1 | 2 | 3 | 4 | 5 |
| g) | obsolescence of curriculum | 0 | 1 | 2 | 3 | 4 | 5 |
| h) | lack of literacy skills of students | 0 | 1 | 2 | 3 | 4 | 5 |
| i) | lack of parental supervision of students | 0 | 1 | 2 | 3 | 4 | 5 |
| j) | lack of student motivation | 0 | 1 | 2 | 3 | 4 | 5 |
| k) | inflexibility of bureaucratic requirements | 0 | 1 | 2 | 3 | 4 | 5 |
| l) | student truancy | 0 | 1 | 2 | 3 | 4 | 5 |
| m) | too short of a school year | 0 | 1 | 2 | 3 | 4 | 5 |
| n) | too much emphasis on test scores | 0 | 1 | 2 | 3 | 4 | 5 |
| o) | too much emphasis on rote learning | 0 | 1 | 2 | 3 | 4 | 5 |
| p) | lack of societal respect for teachers | 0 | 1 | 2 | 3 | 4 | 5 |

## CURRENT CAPABILITIES

**This section seeks to establish the current status of equipment as well as utilization of technology in your school.**

**2. To what extent has your school accomplished each task below?**

| | | Not At All | | | | To A Very Great Extent |
|---|---|---|---|---|---|---|
| a) | revised the curriculum to correlate with the tools and information resources available for computer technology today | 1 | 2 | 3 | 4 | 5 |
| b) | acquired sufficient numbers of personal computers | 1 | 2 | 3 | 4 | 5 |
| c) | periodically upgraded software and hardware | 1 | 2 | 3 | 4 | 5 |
| d) | installed local area network (LAN) | 1 | 2 | 3 | 4 | 5 |
| e) | provided subscription to on-line services, such as Prodigy or Internet, to all staff | 1 | 2 | 3 | 4 | 5 |
| f) | computerized the school's library system | 1 | 2 | 3 | 4 | 5 |
| g) | provided staff development opportunities for teachers to help change teaching styles | 1 | 2 | 3 | 4 | 5 |

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3. **What equipment or capabilities do you currently have in your classroom, library and/or office?** *(Mark all that apply)*

- ○ state of the art personal computers (e.g. 486 IBM/IBM compatibles or MacPerforma/Quaddra)
- ○ earlier generation of personal computers (e.g. 386/286 IBM/IBM compatibles or MacIIci, LCII, Classic)
- ○ obsolescent models of personal computers
- ○ networked personal computers
- ○ telephone
- ○ FAX
- ○ TV Monitor
- ○ VCR
- ○ cable /satellite T.V.
- ○ optical disc technology (CD-ROM, laser-video)
- ○ Internet connection
- ○ commercial on-line databases
- ○ video/transmission/distance-learning
- ○ voice-mail
- ○ e-mail

4. **Which of the following software applications or functions does your school or office currently possess?** *(Mark all that apply)*

- ○ wordprocessing (e.g. Microsoft Word, Wordperfect)
- ○ spreadsheet (e.g. Lotus, Excel)
- ○ graphics/art applications
- ○ desktop publishing (e.g. Pagemaker)
- ○ educational software (e.g. drill and practice software)
- ○ multimedia (e.g. audio, video, graphics and text, CD-ROM encyclopedia)
- ○ an on-line service (e.g. Prodigy, AmericaOnline, Compuserve, etc.)
- ○ electronic games

## EFFECTS OF THE INFORMATION SUPERHIGHWAY (OR NII) ON EDUCATION

**This section seeks to elicit your perceptions of the effects the information superhighway or National Information Infrastructure (NII) may have on educational reform, student learning, schools, communities and teaching.**

5. **How beneficial do you think the information superhighway or NII will be in alleviating the following problems facing education today?**

| | | Don't Know | No Benefit | | | | Extremely Beneficial |
|---|---|---|---|---|---|---|---|
| a) | overcrowding in the classrooms | 0 | 1 | 2 | 3 | 4 | 5 |
| b) | lack of funds and equipment | 0 | 1 | 2 | 3 | 4 | 5 |
| c) | security of persons/school property | 0 | 1 | 2 | 3 | 4 | 5 |
| d) | teenage pregnancy | 0 | 1 | 2 | 3 | 4 | 5 |
| e) | gangs in schools | 0 | 1 | 2 | 3 | 4 | 5 |
| f) | undercompensation of teachers and administrators | 0 | 1 | 2 | 3 | 4 | 5 |
| g) | obsolescence of curriculum | 0 | 1 | 2 | 3 | 4 | 5 |
| h) | lack of literacy skills of students | 0 | 1 | 2 | 3 | 4 | 5 |
| i) | lack of parental supervision of students | 0 | 1 | 2 | 3 | 4 | 5 |
| j) | lack of student motivation | 0 | 1 | 2 | 3 | 4 | 5 |
| k) | inflexibility of bureaucratic requirements | 0 | 1 | 2 | 3 | 4 | 5 |
| l) | student truancy | 0 | 1 | 2 | 3 | 4 | 5 |
| m) | too short of a school year | 0 | 1 | 2 | 3 | 4 | 5 |
| n) | too much emphasis on test scores | 0 | 1 | 2 | 3 | 4 | 5 |
| o) | too much emphasis on rote learning | 0 | 1 | 2 | 3 | 4 | 5 |

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**PLEASE DO NOT WRITE IN THIS AREA**

6. **What effect do you think the information superhighway or NII will have on the educational environment? (Mark one)**

○ will be beneficial ○ will be detrimental ○ will have no effect

7. **How beneficial or detrimental do you think the information superhighway or NII will be on the aspects of the educational environment listed below:**

| | Extremely Detrimental | | | | Extremely Beneficial |
|---|---|---|---|---|---|
| a) the role of parents | 1 | 2 | 3 | 4 | 5 |
| b) computer skills for students | 1 | 2 | 3 | 4 | 5 |
| c) administrative tasks | 1 | 2 | 3 | 4 | 5 |
| d) critical thinking and problem solving skills | 1 | 2 | 3 | 4 | 5 |
| e) the overall curriculum | 1 | 2 | 3 | 4 | 5 |

## Effects of Information Superhighway (or NII) on Student Learning

8. **How will student learning be affected by the information superhighway or NII? (PLEASE NOTE THE SCALE)**

| | Don't Know | Very Negatively | | | | Very Positively |
|---|---|---|---|---|---|---|
| a) the amount of resource material available to students will be expanded | 0 | 1 | 2 | 3 | 4 | 5 |
| b) greater emphasis will be placed on communication and collaborative learning | 0 | 1 | 2 | 3 | 4 | 5 |
| c) there will be greater opportunities for independent investigation and research | 0 | 1 | 2 | 3 | 4 | 5 |
| d) critical and analytical thinking will be increased | 0 | 1 | 2 | 3 | 4 | 5 |
| e) writing and language skills will be improved | 0 | 1 | 2 | 3 | 4 | 5 |
| f) focus and self-motivation will be increased | 0 | 1 | 2 | 3 | 4 | 5 |
| g) more current resource material and real world information will be available | 0 | 1 | 2 | 3 | 4 | 5 |
| h) collegiality and interaction of students with peers around the world will be possible | 0 | 1 | 2 | 3 | 4 | 5 |
| i) awareness of other cultures or alternative perspectives will be enhanced | 0 | 1 | 2 | 3 | 4 | 5 |
| j) there will be unrestricted access by students to all electronic material on the NII | 0 | 1 | 2 | 3 | 4 | 5 |

## Effects of Information Superhighway (or NII) on Teaching

9. **From the list below, what are the five most likely outcomes of the implementation of the information superhighway or NII? (Pick five and rank them in order of likelihood with the first choice corresponding to the greatest likelihood.)**

| | First Preference | | | | Fifth Preference |
|---|---|---|---|---|---|
| a) distance-learning will be available to more students | 1 | 2 | 3 | 4 | 5 |
| b) increased rapport and communication between students and teachers | 1 | 2 | 3 | 4 | 5 |
| c) greater involvement of parents in student's education | 1 | 2 | 3 | 4 | 5 |
| d) revision of curriculum content to emphasize greater computer skills for students | 1 | 2 | 3 | 4 | 5 |
| e) streamlining educational bureaucracy or reducing bureaucratic requirements for teachers and administrators | 1 | 2 | 3 | 4 | 5 |
| f) increased access to information for educators (e.g. databases, electronic bulletin boards) | 1 | 2 | 3 | 4 | 5 |
| g) equalization of educational opportunities for economically disadvantaged or disabled students | 1 | 2 | 3 | 4 | 5 |

**10. How would you rate the following potential effects of the NII and information technology on teaching?** *(PLEASE NOTE THE SCALE)*

| | | Extremely Detrimental | | | | Extremely Beneficial |
|---|---|---|---|---|---|---|
| a) | creation of electronic instructional resources (e.g. electronic textbooks, newspapers) | 1 | 2 | 3 | 4 | 5 |
| b) | reduction in the use of traditional lecture method | 1 | 2 | 3 | 4 | 5 |
| c) | access to a community of specialists | 1 | 2 | 3 | 4 | 5 |
| d) | change in the role of teacher from disseminator of information to coach and facilitator | 1 | 2 | 3 | 4 | 5 |
| e) | students' access to the best teachers, courses and schools regardless of geography | 1 | 2 | 3 | 4 | 5 |
| f) | reduction in student truancy | 1 | 2 | 3 | 4 | 5 |
| g) | reduction in educational bureaucracy | 1 | 2 | 3 | 4 | 5 |
| h) | increased monitoring of students' assignments and homeworks | 1 | 2 | 3 | 4 | 5 |
| i) | greater communication and interaction with colleagues in your field | 1 | 2 | 3 | 4 | 5 |
| j) | enhanced professional development of teachers and administrators | 1 | 2 | 3 | 4 | 5 |
| k) | promotion of societal respect for teachers within the community | 1 | 2 | 3 | 4 | 5 |

## Effects of Information Superhighway (or NII) on Schools/Communities

**11. When the information superhighway or NII is implemented in schools, the benefits will be greater for:**

| | | Don't Know | Strongly Disagree | | Neutral | | Strongly Agree |
|---|---|---|---|---|---|---|---|
| a) | schools in urban areas than schools in rural areas | 0 | 1 | 2 | 3 | 4 | 5 |
| b) | schools in high crime areas than schools in low crime areas | 0 | 1 | 2 | 3 | 4 | 5 |
| c) | more ethnically diverse schools than more ethnically homogeneous schools | 0 | 1 | 2 | 3 | 4 | 5 |
| d) | schools with lower budgets per student than schools with higher budgets per student | 0 | 1 | 2 | 3 | 4 | 5 |
| e) | disabled students/students with special needs than other students | 0 | 1 | 2 | 3 | 4 | 5 |
| f) | economically disadvantaged students than students who are relatively economically better off | 0 | 1 | 2 | 3 | 4 | 5 |

**12. To what extent do you agree or disagree that each of the following is a likely outcome of the effective implementation of the information superhighway or NII?:**

| | | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|---|
| a) | less in-class discussion | 1 | 2 | 3 | 4 | 5 |
| b) | commercialization of services offered to students | 1 | 2 | 3 | 4 | 5 |
| c) | shift of attention from other more crucial issues in education | 1 | 2 | 3 | 4 | 5 |
| d) | overdependence on technology as a substitute for human interaction | 1 | 2 | 3 | 4 | 5 |
| e) | greater disparities in educational opportunities due to unequal availability and access to the NII | 1 | 2 | 3 | 4 | 5 |
| f) | Unequal learning achievements of students caused by differences in students' technical skills and aptitudes | 1 | 2 | 3 | 4 | 5 |
| g) | trivialization of educational subjects by the over-reliance on technology for their presentation | 1 | 2 | 3 | 4 | 5 |
| h) | reduction in the effectiveness of education caused by technology-facilitated larger classes | 1 | 2 | 3 | 4 | 5 |

## OBSTACLES TO THE IMPLEMENTATION OF INFORMATION TECHNOLOGIES IN SCHOOLS

**This section seeks to elicit your perceptions of what would be the obstacles to the successful implementation and use of the information superhighway (or NII) and information technologies in schools.**

**13. From the list below, which of the following are likely to impede the effective implementation of the information superhighway or the NII in the education sector?** *(Pick five and rank them in order of likelihood with the first choice corresponding to the greatest likelihood.)*

| | | First Preference | | | | Fifth Preference |
|---|---|---|---|---|---|---|
| a) | budgetary constraints | 1 | 2 | 3 | 4 | 5 |
| b) | security of persons/school property | 1 | 2 | 3 | 4 | 5 |
| c) | lack of student motivation to develop technical skills | 1 | 2 | 3 | 4 | 5 |
| d) | student behavioral problems | 1 | 2 | 3 | 4 | 5 |
| e) | level of technical training/skills of teachers and administrators | 1 | 2 | 3 | 4 | 5 |
| f) | insufficient equipment for students in the classroom | 1 | 2 | 3 | 4 | 5 |
| g) | lack of appropriate software programs/available material | 1 | 2 | 3 | 4 | 5 |
| h) | lack of incentives/compensation for educators | 1 | 2 | 3 | 4 | 5 |
| i) | conflicting perspectives between administrators and teachers on means to achieve educational objectives | 1 | 2 | 3 | 4 | 5 |
| j) | aversion of teachers and administrators to technology as a learning tool | 1 | 2 | 3 | 4 | 5 |
| k) | inflexibility of bureaucratic requirements for teachers and administrators | 1 | 2 | 3 | 4 | 5 |

**14. The successful implementation and use of information technologies in schools will depend on:**

| | | Don't Know | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|---|---|
| a) | reducing non-teaching requirements of teachers to facilitate the learning and deployment of information technology | 0 | 1 | 2 | 3 | 4 | 5 |
| b) | restructuring of school curriculum to emphasize the role of electronic information and software tools | 0 | 1 | 2 | 3 | 4 | 5 |
| c) | providing adequate equipment in the classroom | 0 | 1 | 2 | 3 | 4 | 5 |
| d) | providing for the security of school equipment | 0 | 1 | 2 | 3 | 4 | 5 |
| e) | training educators on the use of and availability of information technology and its applications for educators | 0 | 1 | 2 | 3 | 4 | 5 |
| f) | providing compensation for educators as incentives to learn, apply, and utilize information technologies in education | 0 | 1 | 2 | 3 | 4 | 5 |
| g) | increasing the computer literacy of students | 0 | 1 | 2 | 3 | 4 | 5 |
| h) | developing quality educational software and programs | 0 | 1 | 2 | 3 | 4 | 5 |
| i) | greater motivation on the part of students to learn uses of information technology | 0 | 1 | 2 | 3 | 4 | 5 |
| j) | integrating applications of NII into reform plans for education | 0 | 1 | 2 | 3 | 4 | 5 |
| k) | increasing research on the education and training applications of current and emerging technologies | 0 | 1 | 2 | 3 | 4 | 5 |
| l) | developing public and private partnerships to support information technology in education | 0 | 1 | 2 | 3 | 4 | 5 |
| m) | increasing school budgets for educator training and NII maintenance | 0 | 1 | 2 | 3 | 4 | 5 |

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## INCENTIVES/REQUIREMENTS FOR THE IMPLEMENTATION OF THE INFORMATION SUPERHIGHWAY (OR NII) FOR EDUCATION

**This section seeks to elicit your perceptions on the requirements and incentives to facilitate the successful implementation of the information superhighway or NII in education.**

**15. What do you think are the five most important incentives that will accelerate the implementation and utilization of information technology in schools?** *(Select five and rank them in order of preference with the first preference corresponding to the most important incentive.)*

| | First Preference | | | | Fifth Preference |
|---|---|---|---|---|---|
| a) greater availability of on-line information | 1 | 2 | 3 | 4 | 5 |
| b) the development of educational network support (help desk, navigational aids) | 1 | 2 | 3 | 4 | 5 |
| c) the establishment of pilot programs in select schools which will serve as technical models | 1 | 2 | 3 | 4 | 5 |
| d) making education technology a greater public priority | 1 | 2 | 3 | 4 | 5 |
| e) government grants/subsidies to implement information technology in education | 1 | 2 | 3 | 4 | 5 |
| f) training of educators in the use of, availability and applications of information technology | 1 | 2 | 3 | 4 | 5 |
| g) reduction in non-technical teaching requirement/workload of educators | 1 | 2 | 3 | 4 | 5 |
| h) streamlining of the bureaucracy within the school district | 1 | 2 | 3 | 4 | 5 |
| i) greater availability and affordability of educational software programs | 1 | 2 | 3 | 4 | 5 |
| j) inexpensive access to telecommunications | 1 | 2 | 3 | 4 | 5 |

**16. To what extent do you agree or disagree with the following statements regarding funding of the information superhighway or NII?**

| | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|
| a) The general status of information technology in schools is not attributable to a lack of funds | 1 | 2 | 3 | 4 | 5 |
| b) Funds for information technology in the schools could be better spent in other areas of education | 1 | 2 | 3 | 4 | 5 |

**17. To what extent do you agree or disagree that the following are appropriate sources of funding for the information superhighway or NII?**

| | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|
| a) the streamlining of the bureaucracy within the school district/system | 1 | 2 | 3 | 4 | 5 |
| b) greater reliance on the federal government for grants to enable implementation of the NII in the schools | 1 | 2 | 3 | 4 | 5 |
| c) greater reliance on state and local government for grants to enable implementation of the NII in the schools | 1 | 2 | 3 | 4 | 5 |
| d) greater support from the corporate private sector | 1 | 2 | 3 | 4 | 5 |
| e) increase in tax rate specifically to fund information technology in education | 1 | 2 | 3 | 4 | 5 |
| f) reallocation of existing funds from other outlays or sectors to information technology | 1 | 2 | 3 | 4 | 5 |

## UNIVERSAL ACCESS

**18. To what extent do you agree or disagree that each of the following is an appropriate funding source for access fees for schools and school district offices to the information superhighway or NII?** *(access is basic connection to schools or office not including internal equipment or networks)*

| | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|
| a) the federal government | 1 | 2 | 3 | 4 | 5 |
| b) the local government | 1 | 2 | 3 | 4 | 5 |

**18.** ***continued***

| | | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|---|
| c) | schools should pay a portion with the local or federal government absorbing the rest | 1 | 2 | 3 | 4 | 5 |
| d) | schools should absorb full cost | 1 | 2 | 3 | 4 | 5 |
| e) | businesses | 1 | 2 | 3 | 4 | 5 |
| f) | parents | 1 | 2 | 3 | 4 | 5 |
| g) | telecommunication companies | 1 | 2 | 3 | 4 | 5 |

## Overall Perception Of The Information Superhighway Or NII

**This section seeks to elicit your views on the information superhighway or NII, in general.**

**19. From the list below, what are the five most important reasons for building the information superhighway or NII?** *(Pick five and rank them in order of importance with the first choice corresponding to the most important reason)*

| | | First Preference | | | | Fifth Preference |
|---|---|---|---|---|---|---|
| a) | research and innovation | 1 | 2 | 3 | 4 | 5 |
| b) | increase in business efficiency | 1 | 2 | 3 | 4 | 5 |
| c) | national health and safety | 1 | 2 | 3 | 4 | 5 |
| d) | international competitiveness | 1 | 2 | 3 | 4 | 5 |
| e) | entertainment | 1 | 2 | 3 | 4 | 5 |
| f) | education and culture | 1 | 2 | 3 | 4 | 5 |
| g) | national security | 1 | 2 | 3 | 4 | 5 |
| h) | better informed citizenry | 1 | 2 | 3 | 4 | 5 |
| i) | increased government efficiency and streamlined bureaucracy | 1 | 2 | 3 | 4 | 5 |
| j) | environmental benefits (telecommuting, environmental monitoring) | 1 | 2 | 3 | 4 | 5 |
| k) | job creation | 1 | 2 | 3 | 4 | 5 |
| l) | the national information highway should not be built at all | 1 | 2 | 3 | 4 | 5 |

| | | No Knowledge | | | | High Level of Understanding |
|---|---|---|---|---|---|---|
| **20.** | **How would you rate your understanding of the information superhighway or NII?** | 1 | 2 | 3 | 4 | 5 |

**21. To what extent do you agree or disagree with the following statements regarding the involvement of the government and the private sector in the information superhighway or NII?**

| | | Don't Know | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|---|---|
| a) | only the government should invest in and build the information superhighway or NII network | 0 | 1 | 2 | 3 | 4 | 5 |
| b) | only the private sector should invest in and build the information superhighway or NII | 0 | 1 | 2 | 3 | 4 | 5 |
| c) | private sector should develop computer programs and software | 0 | 1 | 2 | 3 | 4 | 5 |
| d) | government should ensure equitable access and intellectual freedom rights of all users of the NII | 0 | 1 | 2 | 3 | 4 | 5 |
| e) | government should provide incentives to industry to speed up the process of digitizing information and developing educational software | 0 | 1 | 2 | 3 | 4 | 5 |
| f) | government should protect the rights and information needs of the educational community from commercialization | 0 | 1 | 2 | 3 | 4 | 5 |
| g) | government should work with business and the education sector to develop a vision for the information superhighway or NII | 0 | 1 | 2 | 3 | 4 | 5 |

**PLEASE DO NOT WRITE IN THIS AREA**

## DEMOGRAPHICS

**This section seeks to attain a profile of you, as an individual and your school.**

**22. Which of the following descriptions most closely resembles your professional position and/or teaching specialties?** *(Mark all that apply)*

- ○ pre-kindergarten teacher
- ○ kindergarten teacher
- ○ elementary or grammar school teacher
- ○ junior high or middle high school teacher
- ○ senior high school teacher
- ○ math and/or science teacher
- ○ social science and/or humanities
- ○ physical ed., sports and/or health teacher
- ○ music, fine arts, and/or performing arts teacher
- ○ special education teacher
- ○ curriculum specialist
- ○ therapist (e.g. physical, speech, psychological)
- ○ computer/technology specialist
- ○ principal or assistant principal
- ○ school library media specialist
- ○ teaching/administrative support
- ○ administrator
- ○ academic advisor
- ○ state credentialed
- ○ state certification

**23. What equipment/capabilities do you currently have in your home?** *(Mark all that apply)*

- ○ personal computer
- ○ networked personal computer
- ○ telephone
- ○ FAX
- ○ TV Monitor
- ○ VCR
- ○ cable/satellite T.V.
- ○ optical disc technology (CD-ROM, video-disc)
- ○ commercial on-line databases or Internet
- ○ video transmission/distance-learning
- ○ voice mail or telephone answering machine
- ○ e-mail

**24. How long have you worked in the education field?**

○ 1-5 years ○ 6-10 years ○ 11-15 years ○ 16-20 years ○ more than 20 years

**25. What is your gender?** ○ Male ○ Female

**26. What is your ethnic background?** *(Mark one)*

- ○ Caucasian
- ○ African American
- ○ Hispanic
- ○ Asian or Pacific Islander
- ○ Native American or Alaskan

**27. What is the highest educational level you have achieved?** *(Mark one)*

- ○ Less than a bachelor's degree
- ○ Bachelor's degree or equivalent
- ○ Some graduate education
- ○ Master's degree
- ○ Ph.D, Ed.D, or equivalent
- ○ Other *(Please specify)* _____

**28. What is the size of your school?** *(Mark one)*

○ Less than 400 students ○ Between 400 and 800 students ○ More than 800 students

**29. In what type of community is your school located?** *(Mark one)* ○ Rural ○ Suburban ○ Urban

**30. What is the major ethnic group in your school?** *(Mark one)*

- ○ Majority are Caucasians
- ○ Majority are African Americans
- ○ Majority are Hispanics
- ○ Majority are Asians or Pacific-Islanders
- ○ Majority are Native Americans or Alaskans
- ○ No single ethnic group constitutes a majority

**31. In what region of the country is your school located?** *(Mark one)*

- ○ Mid-Atlantic (NY, NJ, PA)
- ○ Pacific (CA, OR, WA, AK, HI)
- ○ East North Central (OH, IN, IL, MI, WI)
- ○ New England (ME, MA, VT, NH, RI, CT)
- ○ South Atlantic (DE, MD, DC, VA, WV, NC, SC)
- ○ Mountain (MT, WY, CO, ID, NM, NV, AZ, UT)
- ○ West North Central (MN, IA, MO, ND, SD, NE, KS)
- ○ West South Central (AR, LA, OK, TX)
- ○ East South (KY, TN, AL, MS, GA, FL)
- ○ Other

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