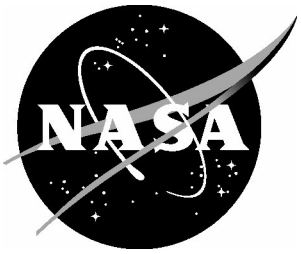
NASA/TM-2004-213012



Evaluating the Effectiveness of the 2002–2003 NASA SCIence Files™ Program

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April 2004

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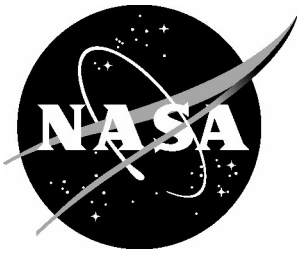

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Summary

The NASA SCIence Files™ is a research and standards-based, Emmy®-award-winning series of 60-minute instructional programs for students in grades 3–5. Programs are designed to introduce students to NASA; to integrate mathematics, science, and technology through the use of Problem-Based Learning (PBL), scientific inquiry, and the scientific method; and to motivate students to become critical thinkers and active problem solvers. Each of the programs in the 2002–2003 NASA SCIence Files™ series included an instructional broadcast, a companion educator guide, an interactive web site featuring a PBL activity, plus a wealth of instructional resources. In March 2003, an electronic (self-reported) survey was sent to a randomly selected sample of 1,000 NASA SCIence Files™ registrants. Of these surveys, 209 were returned by the established cutoff date. Most of the survey questions employed a 5-point Likert-type response scale. Survey topics included (1) instructional technology and teaching; (2) instructional programming and technology in the classroom; (3) the NASA SCIence Files™ program (television, educator guide, classroom activity, web-based activity, and web site); (4) classroom environment; and (5) demographics. About 82 percent of the respondents were female, 75 respondents identified "classroom teacher" as their present professional duty, about 81 percent worked in a public school, and about 57 percent held a master's degree or master's equivalency. Regarding the NASA SCIence Files™, respondents reported that (1) they used the programs in the 2002–2003 NASA SCIence Files™ series; (2) the goals and objectives for the series were met; (3) the programs were aligned with the national mathematics, science, and technology standards; (4) the program content was developmentally appropriate for grade level; and (5) the programs in the series enhanced the teaching of mathematics, science, and technology.

Introduction

The NASA Langley Research Center's Office of Education (OEd) has primary responsibility within the Agency for the development of instructional distance learning programs and for the integration of instructional technology. Through the NASA Center for Distance Learning, the OEd has developed a suite of five distance learning programs. Collectively, the goals of the programs include (1) increasing educational excellence; (2) enhancing and enriching the teaching and learning of mathematics, science, and technology; (3) increasing scientific and technological literacy; and (4) communicating the results of NASA discovery, exploration, innovation, and research. The NASA SCIence Files™ airs nationally on Cable Access, ITV (instructional television), and PBS-member stations. Presently, 122,395 educators, representing 3,986,674 students in 50 states have registered for the NASA SCIence Files™. Information about the NASA SCIence Files™ can be found at the following web site: <http://scifiles.larc.nasa.gov>.

Evaluation is critical to any program's success. To determine the effectiveness, as well as the credibility and validity of the series, we survey NASA SCIence Files™ registrants annually (appendix A). This report contains the quantitative and qualitative results of our attempt to determine the effectiveness of the 2002–2003 NASA SCIence Files™ series. Also included in this report are suggestions for the improvement of the NASA SCIence Files™ program series.

Overview of NASA SCIence Files™

Produced by the Office of Education at the NASA Langley Research Center in Hampton, Virginia, NASA SCIence Files™ is designed to increase scientific literacy, improve the mathematics and science proficiency of students in grades 3–5, and increase the competency of mathematics and science educators.

Now beginning its fourth year of production, the goals of this research and standards-based, Emmy®-award-winning distance learning program include (1) showing students the application of mathematics, science, and technology on the job; (2) presenting mathematics, science, and technology as disciplines that require creativity, critical thinking, and problem-solving skills; (3) demonstrating the integration of workplace mathematics, science, and technology as a collaborative process; (4) raising student awareness about careers that require mathematics, science, and technology; and (5) overcoming stereotyped beliefs by presenting women and minorities performing challenging engineering and science tasks.

The 2002–2003 NASA SCIence Files™ series has received numerous awards for program achievement, educational content, web site content, and video production. At the 2002 Mid-Atlantic Emmy® Awards, the NASA SCIence Files™ won an Emmy® for Best Children's Series. Other awards for the 2002–2003 NASA SCIence Files™ season include a 2003 Bronze Telly Award for *The Case of the Powerful Pulleys* and a 2003 Crystal Communicator Award, also for *The Case of the Powerful Pulleys*. A complete list of the awards received by the NASA SCIence Files™ can be found at <http://scifiles.larc.nasa.gov/text/awards.html>.

The NASA SCIence Files™ is the second oldest program in the K–12 (pre-college) distance learning initiative. In addition to the goals listed in the Overview, the NASA SCIence Files™ also seeks to create opportunities for parental and community involvement, attempts to link formal education (e.g., the school) with informal education (e.g., libraries, museums, and science centers), and also to link pre-service and in-service education. The NASA SCIence Files™ model is research- and standards-based, instructional rather than educational, result oriented, learner centered, technology focused, and feedback driven. NASA SCIence Files™ is free to educators; however, educators must register to receive the lesson (educator) guides. There are four ways to register for the NASA SCIence Files™:

(1) e-mail: scifiles@edu.larc.nasa.gov
(2) online: http://edu.larc.nasa.gov/whyfiles/
(3) telephone 757-864-6100
(4) U.S. mail: NASA SCIence Files™
Mail Stop 400
Office of Education
NASA Langley Research Center
Hampton, VA 23681-2199

The number of teachers registering for and the number of students viewing each program must be specified.

Rights and Responsibilities

NASA SCIence Files™ is a U.S. Government program and is not subject to copyright. No fees or licensing agreements are required to use programs in this series. Off-air rights are granted in perpetuity. Educators are granted unlimited rights for duplication, dubbing, broadcasting, cable casting, and web casting into perpetuity, with the understanding that all NASA SCIence Files™ materials will be used for educational purposes. Neither the broadcast nor the lesson guide may be used, either in whole or in part, for commercial purposes without the express written consent of the NASA SCIence Files™.

Production and Delivery

Programs in the NASA SCI Files™ series are live broadcasts. They comply with the specifications found in the National Educational Telecommunications Association (NETA) Common-Sense Guide to Technical Excellence. The television broadcasts were each 60 minutes long. Each program was broadcast (delivered) via KU- and C-band satellite transmission. Public Broadcasting System (PBS) affiliates, statewide television systems such as T-STAR, district wide television systems, and cable access channels carried NASA SCI Files™. NASA SCI Files™ is available at <http://www.knowitall.org> (South Carolina Education Television). The NASA SCI Files™ web site and distributed flyers (appendix B) present the satellite coordinates and broadcast dates and times.

Availability

For a minimal fee, educators can obtain the NASA SCI Files™ videos and print materials from the NASA Central Operation of Resources for Educators (CORE). Videos and print materials are also available from the NASA Educator Resource Center (ERC).

NASA CORE
15181 State Route 58 South
Oberlin, OH 44074-9799
Phone: (440) 775-1400
Fax: (440) 775-1460
E-mail: nasaco@leeca.esu.k12.oh.us
URL: http://CORE.spacelink.nasa.gov

Importance of Evaluation

Formative and summative evaluation is critical to any program's success. A 2001 CEO Forum School Technology and Reading Report states, "[a]ssessment should become an ongoing part of instruction to inform and enhance teaching and learning and to promote student achievement" (CEO Forum, 2001). NASA SCI Files™ is a tool for enhancement/enrichment, and the only way to gauge the effectiveness of that tool is to assess how it is being used by classroom teachers. Evaluation is important for numerous reasons, and it plays an important role in the evolution of distance education (Hawkes, 1996). First, evaluation improves the credibility and validity of a program (Wade, 1999). Second, evaluation can be used to make changes in the program (Ramirez, 1999), which is particularly important because of the dynamism inherent both in education and technology. According to Dr. Lawrence T. Frase, Executive Director of the Research Division of Cognitive and Instructional Science at the Educational Testing Service, "The major issue for educational technology in the next millennium will be the effectiveness of its adaptation to social, scientific, and political change" (*THE Journal*, 2000). Third and finally, evaluation can help determine the effectiveness of a program (Hazari and Schnorr, 1999). Because of the wide array of information that can be reaped from the evaluation process, NASA's Center for Distance Learning conducts an ongoing quantitative and qualitative assessment of each of its programs, including the NASA SCI Files™.

The 2002–2003 season was the second season in which the NASA SCI Files™ underwent a rigorous quantitative and qualitative evaluation. National data concerning teacher demographics, classroom environments, and teacher perceptions of instructional technology have been infused into the 2002–2003 NASA SCI Files™ evaluation report to allow the data received through the NASA SCI Files™ evaluation process to be compared to other national studies. In future seasons, the Office of Education may seek to

expand evaluation to also include classroom observation by skilled observers and student feedback by means of short surveys. In summary, the Office of Education is continually striving to improve the evaluation process by creating more diverse and in-depth measurement techniques. As stated by Michael Hawkes (1996), "[b]y using an array of evaluation techniques and including everyone involved in the delivery of distance learning (parents, teachers, students) in data collection activities, evaluation tasks will not appear as ominous as they once did. More important, school leaders will be able to assess whether distance education technologies are part of the solution to improved learning and instruction" (p. 33).

Methodology

A sample of 1,000 registrants was randomly drawn from the NASA SCI Files™ database. An electronic (self-reported) survey/questionnaire was sent to the sample group in early March 2003. The survey contained 118 questions, 10 of which dealt with demographics (appendix A). Respondents had the option to request a free copy of the final assessment report (all individuals who returned a survey received a complimentary NASA educational CD-ROM). In all, 209 usable surveys were received by the established cutoff date. The overall response rate for the 2002–2003 NASA SCI Files™ evaluation project, with only one mailing, was approximately 20 percent.

In addition to the quantitative data collected, we also record all qualitative data received during the 2002–2003 NASA SCI Files™ season (appendix C). These comments come from the evaluation questions that allowed respondents to offer "Other" responses or to qualify their response. The qualitative data collected were also incorporated into the changes suggested for the 2003–2004 NASA SCI Files™ season.

Demographics

The evaluation booklet contained a variety of demographic questions, the answers to which could be used to establish respondents' profiles and the classroom environment, and to determine teacher/student computer use. Demographic findings for survey respondents follow:

- About 82 percent of respondents were female.
- About 39 percent were located in suburban school districts, 27 percent in rural school districts, and 34 percent in urban school districts.
- 74 percent identified "classroom teacher" as their present professional duty.
- About 81 percent worked in a public school.
- About 57 percent held a master's degree or master's equivalency.
- About 84 percent identified themselves as Caucasian.
- The mean and median ages were 47.94 and 49, respectively.
- The mean and median "years as a professional educator" were 15.57 and 14, respectively.
- About 95 percent owned a personal computer.

Presentation of Data

The survey questions were divided among eight topics. The respondents were asked to react to questions about instructional technology and programming and its use in the classroom and to items specifically related to the NASA SCI Files™ series. Findings for the eight topics are presented in this section. The topic results are reported in terms of mean (average) ratings when the survey items involved a 5-point Likert scale and in percentages when the questions required other responses. Mean values will appear in parentheses following appropriate questions. Each question was calculated by using the number of respondents that answered that particular question (n) rather than from the total population of respondents (N). For a complete listing of raw data from the 2002–2003 NASA SCI Files™ evaluation process as well as all previous evaluations, please refer to the longitudinal data represented in appendix D.

Topic 1. Instructional Technology and Teaching

Respondents were asked to rate seven statements related to instructional technology and teaching (table 1). The highest mean rating ($\bar{x}$ = 4.41) was given to the statement "instructional technology enables and increases student motivation and enthusiasm for learning." The next highest mean ratings were given to the statements "technology enables teachers to be more creative" ($\bar{x}$ = 4.37), "enables teachers to accommodate different learning styles" ($\bar{x}$ = 4.32), and "enables teachers to teach more effectively" ($\bar{x}$ = 4.31). At slightly lower mean ratings, the respondents reported that "instructional technology increases student learning and comprehension" ($\bar{x}$ = 4.20) and "student willingness to discuss content and exchange ideas" ($\bar{x}$ = 4.19). The lowest mean rating ($\bar{x}$ = 3.91) was given to the statement "instructional technology is effective with virtually all students."

Table 1. Instructional Technology and Teaching

Question: Instructional Technology…	Mean	Median	Standard deviation	Min.	Max.	Number (n)
enables teachers to teach more effectively.	4.31	5	0.94	1	5	203
enables teachers to accommodate different learning styles.	4.32	5	0.95	1	5	204
enables teachers to be more creative.	4.37	5	0.94	1	5	203
increases student learning and comprehension.	4.20	4	0.97	3	5	199
increases student willingness to discuss content/exchange ideas.	4.19	4	0.92	1	5	201
increases student motivation and enthusiasm for learning.	4.41	5	0.93	1	5	200
is effective with virtually all students.	3.91	4	1.03	1	5	197

(n) denotes number of responses.
A 1–5 point scale was used to measure agreement, in which "5" indicates strongly agree.
Min. denotes minimum.
Max. denotes maximum.

Topic 2. Instructional Programming and Technology in Classroom

Instructional Programming

Respondents were asked to respond to four statements about instructional technology programming intended for use in the classroom (table 2). Higher mean ratings were given to the statements "schools have increasingly greater access to instructional technology programs" ($\bar{x}$ = 3.91) and "most of these programs are of good quality" ($\bar{x}$ = 3.78). Teachers rated the programs as "easily broken into 'teachable' units" ($\bar{x}$ = 3.78) and "appropriate for their students" ($\bar{x}$ = 3.67). These means are consistent with the other data reaped through this evaluation. These results are consistent with one of the conclusions of the 2001 CEO Forum Report on school technology, which stated that for instructional technology to be positively received, "[s]tate, district, and local policies, education programs, and resource allotment must be aligned in order to attain goals" (CEO Forum, 2001). Teachers are looking for more than the mere existence of instructional programming; they are looking for programming that is easily accessible and aligned with educational goals. These results are an improvement from last season's data.

Table 2. Instructional Programming

Question: Please indicate the extent to which you disagree or agree with the following statements about instructional programming and technology.	Mean	Median	Standard deviation	Min.	Max.	Number (n)
Increasingly, schools have greater access to instructional technology programs.	3.91	4	1.04	1	5	196
Most of these programs are of good quality.	3.78	4	1.02	1	5	196
Most of these programs are **not** appropriate (i.e., too advanced or too basic) for my students.	3.67	4	0.99	1	5	188
Most of these programs are **not** easily broken into "teachable units."	3.78	4	1.02	1	5	188

(n) denotes number of responses.
A 1–5 point scale was used to measure agreement, in which "5" indicates strongly agree.
Min. denotes minimum.
Max. denotes maximum.

Instructional Technology

Respondents completing the survey reacted to three statements concerning the actual use of instructional technology in the classroom (table 3). Respondents gave the highest mean rating ($\bar{x}$ = 3.72) to the statement (1) "administrators support and encourage teachers to use instructional technology in the classroom" and (2) "classrooms are growing increasingly rich in instructional technology" ($\bar{x}$ = 3.68). The lowest rating was given to the statement "teachers are generally positive about introducing/using instructional technology in the classroom" ($\bar{x}$ = 3.45).

Table 3. Instructional Technology

Question: Please indicate the extent to which you disagree or agree with the following statements about instructional programming and technology.	Mean	Median	Standard deviation	Min.	Max.	Number (n)
Administrators support and encourage teachers to use instructional technology in the classroom.	3.72	4	1.17	1	5	191
Classrooms are growing increasingly rich in instructional technology.	3.68	4	1.06	1	5	202
Teachers are generally positive about introducing/using instructional technology in the classroom.	3.45	3	1.01	1	5	198

(n) denotes number of responses.
A 1–5 point scale was used to measure agreement, in which "5" indicates strongly agree.
Min. denotes minimum.
Max. denotes maximum.

Respondents were also given a list of seven factors that could prohibit or limit the integration of technology into their instructional programs. They were asked to indicate which of these factors they considered to be barriers to integrating technology into their instruction (fig. 1). Respondents were not limited to selecting one factor; rather they could select all factors that applied. Respondents indicated that limited access to computers and lack of time in the schedule for technology projects (62 percent), lack of teacher training (49 percent), not enough computer software (43 percent), lack of technical support (42 percent), and lack of knowledge about how to integrate technology into the curriculum (38 percent). The failure of purchased software to be installed was reported as the factor least affecting the integration of technology in the classroom (6 percent).

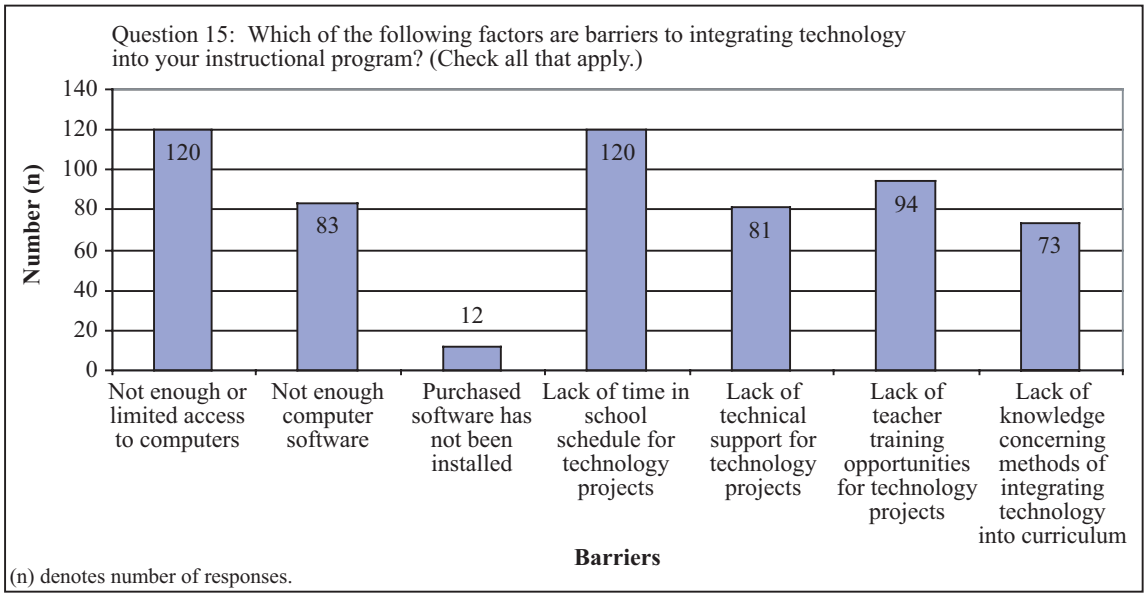

Figure 1. Barriers to integrating technology into instructional program.

Topic 3. Overall Assessment of NASA SCI Files™

Respondents were asked to assess the programs in the 2002–2003 NASA SCI Files™ series (table 4). The highest mean ratings were given in response to the statement "the content of the NASA SCI Files™ series was aligned with the national mathematics, science, and technology standards" ($\bar{x}$ = 4.47) and to the statement "the NASA SCI Files™ program content enhanced the teaching of mathematics, science, and technology" ($\bar{x}$ = 4.44). High mean ratings were also given in response to the statement "the programs presented mathematics, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills" ($\bar{x}$ = 4.41). Respondents agreed that "the programs presented the application of mathematics, science, and technology as a collaborative process," and that "the goals and objectives of the series were met" ($\bar{x}$ = 4.36). The lowest mean ratings were given to the statement "program content was easily integrated into the curriculum," "the programs presented women and minorities performing challenging engineering and science tasks" ($\bar{x}$ = 4.31), and "program content was developmentally appropriate for the grade level" ($\bar{x}$ = 4.23).

Table 4. Overall Assessment of NASA SCI Files™ Program

Question: Please indicate the extent to which you disagree or agree with the following statements concerning the programs in the 2002–2003 NASA SCI Files™ series.	Mean	Median	Standard deviation	Min.	Max.	Number (n)
The goals and objectives of the series were met.	4.36	5	0.84	1	5	23
The program content was developmentally appropriate for the grade level.	4.23	4	0.89	1	5	27
The program content was aligned with the national mathematics, science, and technology standards.	4.47	5	0.78	1	5	24
The program content was easily integrated into the curriculum.	4.31	4	0.78	1	5	25
The program content enhanced the teaching of mathematics, science, and technology.	4.44	5	0.79	1	5	20
The programs raised student awareness about careers that require mathematics, science, and technology on the job.	4.34	5	0.90	1	5	27
The programs presented the application of mathematics, science, and technology on the job.	4.36	5	0.84	1	5	22
The programs presented workplace mathematics, science, and technology as a collaborative process.	4.35	5	0.86	1	5	23
The program presented mathematics, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills.	4.41	5	0.85	1	5	20
The programs presented women and minorities performing challenging engineering and science tasks.	4.31	5	0.86	1	5	32

(n) denotes number of responses.
A 1–5 point scale was used to measure agreement, in which "5" indicates strongly agree.
Min. denotes minimum.
Max. denotes maximum.

Topic 4. Use of NASA SCI Files™ Video Programs

Respondents were asked if they used the programs at the time they were received (fig. 2). The number of "yes" responses varied from 71 respondents for Program 1 to 32 respondents for Program 9. The number of "no" responses varied from 34 respondents for Program 5 to 18 respondents for Program 6. Overall, the number of respondents indicating they "may use the program in the future" ranged from 133 respondents for Program 9 to 85 respondents for Program 5.

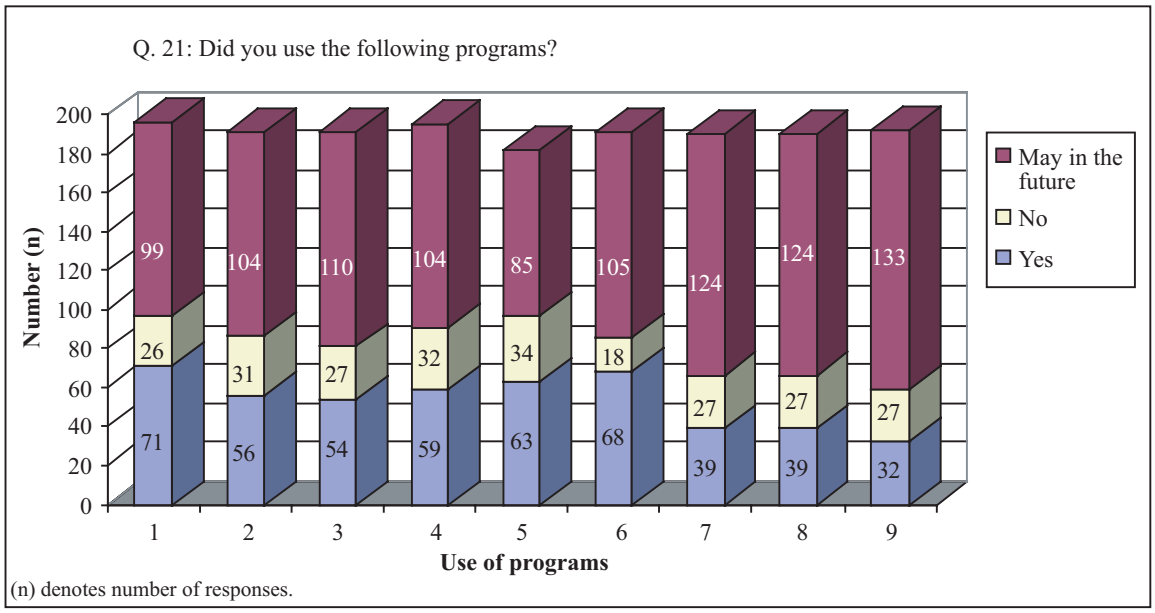

Figure 2. Use of programs in the NASA SCI Files™ series.

Respondents who used the NASA SCI Files™ programs were asked to identify how they used them in their classes (fig. 3). Respondents were asked to choose from four possible uses for each of the four new programs: (1) to introduce a curriculum topic, objective, or skill; (2) to reinforce a curriculum topic, objective, or skill; (3) as a special interest topic; and (4) as a break from the classroom routine.

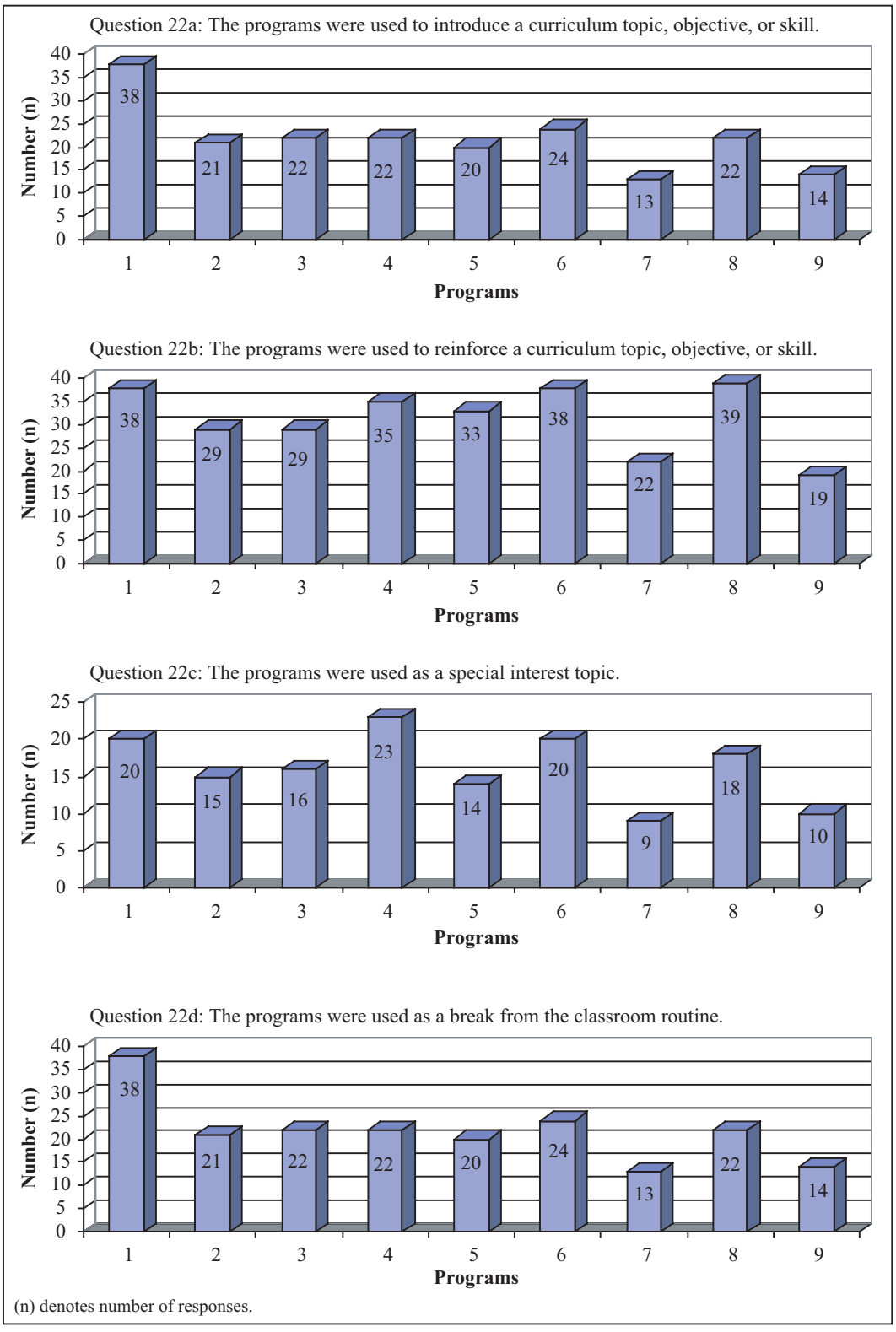

Figure 3. How NASA SCI Files™ programs are used in the classroom.

Program Delivery

Respondents were then asked how they viewed each of the programs. Options included live, taped, or via both methods (fig. 4).

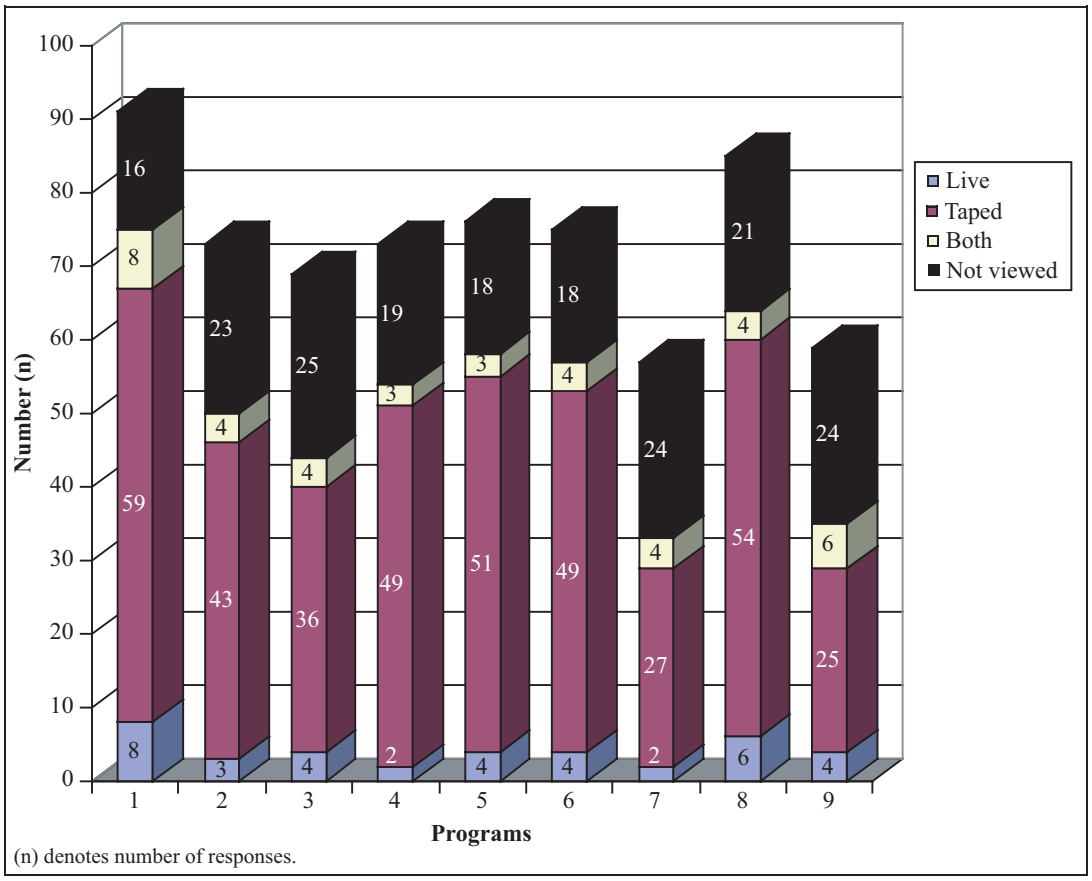

Figure 4. How respondents viewed NASA SCI Files™ programs.

Program Acquisition

Respondents who used the program were then asked to indicate the method by which they received the program.

- **38** respondents indicated that they viewed programs **on PBS.**
- **31** indicated they had **downloaded** the programs.
- **41** indicated that a **Media Specialist had taped it** for later viewing.
- **46** indicated that **they, or someone else, had taped it** for later viewing.
- **28** indicated that **NASA had sent them** copies of the programs.

Ease of Attainability

A follow-up question regarding receipt of the NASA SCI Files™ program inquired whether the respondent experienced any difficulty obtaining any of the programs in the 2002–2003 series. Of the

183 responses to this question, 41 percent indicated experiencing difficulty obtaining the programs, down significantly from 55 percent in the 2000–2001 season.

Grades Viewing NASA SCI Files™ Programs

Respondents who used the 2002–2003 NASA SCI Files™ were asked to report which grade levels viewed the programs (fig. 5).

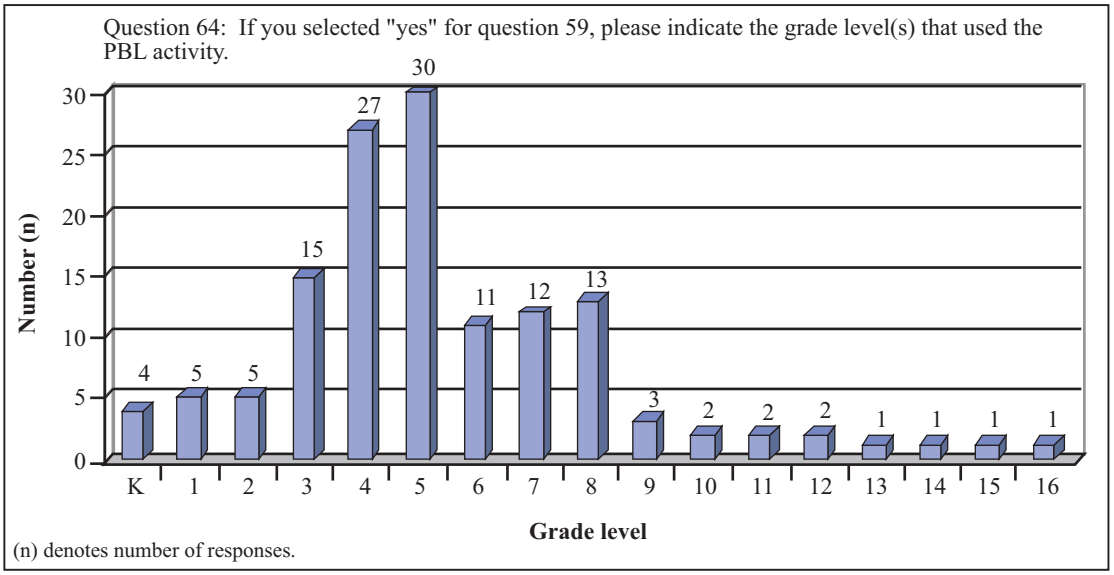

Figure 5. Grade levels viewing NASA SCI Files™ programs.

Quality of Television/Video Programs

The last component of the NASA SCI Files™ television/video program evaluation process asked respondents to evaluate program content and quality by indicating their level of agreement with nineteen statements (table 5). The statements receiving the strongest support from the respondents were "the programs made 'learning science' interesting" ($\bar{x}$ = 4.50), "the programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills," ($\bar{x}$ = 4.47), and "the programs were a valuable instructional aid" ($\bar{x}$ = 4.39). High marks were also given to the statements that "the programs increased students' knowledge of science," and "the programs increased student enthusiasm for learning" ($\bar{x}$ = 4.38). The lowest scores were attributed to the statements "the programs were developmentally appropriate for the grade level" ($\bar{x}$ = 4.23), "the programs increased student willingness to discuss/exchange ideas" ($\bar{x}$ = 4.17), and "the programs were effective with virtually all types of students" ($\bar{x}$ = 4.04).

Table 5. Quality of NASA SCI Files™ Television/Video Programs

Question: Please indicate the extent to which you disagree or agree with the following statements concerning the programs in the 2002–2003 NASA SCI Files™ series.	Mean	Median	Standard deviation	Min.	Max.	Count (n)
The programs were well organized.	4.36	5	0.81	1	5	162
The programs were of good technical quality.	4.44	5	0.85	1	5	159
The programs made "learning science" interesting.	4.50	5	0.76	1	5	154
The programs increased your students' knowledge of science.	4.38	5	0.84	1	5	152
The programs presented a "problem-based learning" environment.	4.37	5	0.88	1	5	158
The programs stressed the importance of information literacy skills.	4.25	4	0.89	1	5	151
The programs increased student willingness to discuss/exchange ideas.	4.17	4	0.83	1	5	149
The programs increased student enthusiasm for learning.	4.38	5	0.67	1	5	152
The programs were effective with virtually all types of students.	4.04	4	0.93	1	5	146
The programs were a valuable instructional aid.	4.39	5	0.82	1	5	157
The programs were developmentally appropriate for the grade level.	4.23	4	0.89	1	5	153
The programs were easily incorporated into the curriculum.	4.26	4	0.89	1	5	151
The programs enhanced the integration of mathematics, science, and technology in the classroom.	4.43	5	0.85	1	5	156
The programs raised student awareness of careers that require mathematics, science, and technology.	4.33	5	0.85	1	5	152
The programs demonstrated the application of mathematics, science, and technology on the job.	4.38	5	0.88	1	5	159
The programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills.	4.47	5	0.82	1	5	159
The programs stressed the importance of information technology skills.	4.34	4.5	0.82	1	5	158
The programs presented women and minorities performing challenging engineering and scientific tasks.	4.26	4	0.87	1	5	145
The programs were a positive link between the lesson guide and the web site.	4.26	4	0.91	1	5	145

(n) denotes number of responses.
A 1–5 point scale was used to measure agreement, in which "5" indicates strongly agree.
Min. denotes minimum.
Max. denotes maximum.

Length of Program

Each program in the NASA SCI Files™ series is 60 minutes long. Respondents were asked to give their opinion as to the length of the 2002–2003 NASA SCI Files™ programs (fig. 6).

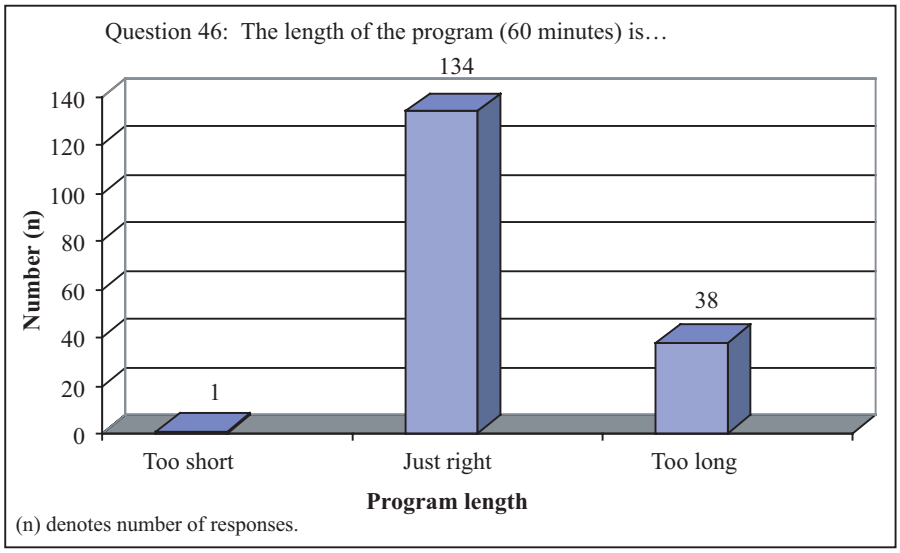

Figure 6. Program length.

Topic 5. NASA SCI Files™ Educator Guides

Use of Educator Guides

Respondents were asked if they used the educator guides they received as part of their registration with the NASA SCI Files™ series (fig. 7). The number of "yes" responses varied from 64 respondents for Program 1 to 32 respondents for Program 9. The number of "no" responses ranged from 29 respondents for Program 2 to 19 respondents for Program 8. Overall, the number of respondents indicating that they "may use the program in the future" ranged from 101 respondents for Program 9 to 81 respondents for Program 2.

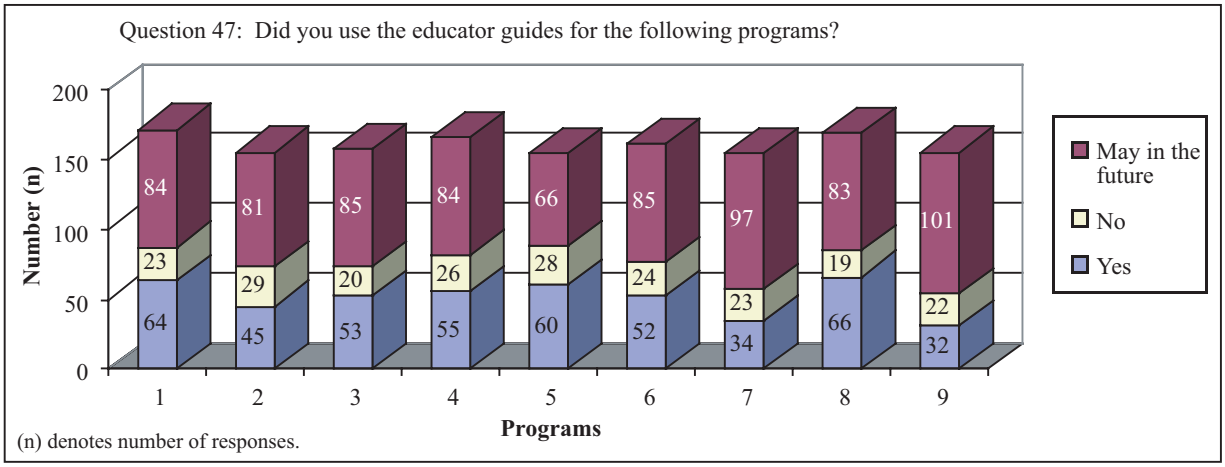

Figure 7. Use of educator guides.

Quality of Educator Guides

The respondents were asked to react to seven statements about the quality of the NASA SCI Files™ educator guides (table 6). Respondents indicated that "the educator guides were a valuable instructional aid," giving it the highest mean rating ($\bar{x}$ = 4.48), followed by the statement "the print and electronic resources in the educator guides were a valuable instructional aid" ($\bar{x}$ = 4.45). High scores were also given to the statement "the activities and worksheets helped the students learn the 'stated' learning objectives," and "the layout of the educator guides presented information clearly" ($\bar{x}$ = 4.38). The statement that "the educator guides were easily downloaded from the Internet" received the lowest mean rating ($\bar{x}$ = 4.32).

Table 6. Quality of NASA SCI Files™ Educator Guides

Question	Mean	Median	Standard deviation	Min.	Max.	Number (n)
The educator guides correlated with the video.	4.36	5	0.88	1	5	123
The activities and worksheets helped students learn the "stated" learning objectives.	4.38	5	0.85	1	5	133
The directions/instructions in the educator guides were easily understood.	4.34	5	0.88	1	5	137
The layout of the educator guides presented the information clearly.	4.38	5	0.86	1	5	140
The educator guides were a valuable instructional aid.	4.48	5	0.80	1	5	134
The print and electronic resources in the educator guides were a valuable instructional aid.	4.45	5	0.78	1	5	129
The educator guides were easily downloaded from the Internet.	4.32	5	1.03		5	100

(n) denotes number of responses.
A 1–5 point scale was used to measure agreement, in which "5" indicates strongly agree.
Min. denotes minimum.
Max. denotes maximum.

Obtaining Educator Guides

Respondents were asked whether they had difficulty obtaining any of the guides in the 2002–2003 NASA SCI Files™ series (fig. 8). Of the respondents, 13 percent indicated they had difficulty obtaining the guides, a significant decrease from last year's finding of 21 percent.

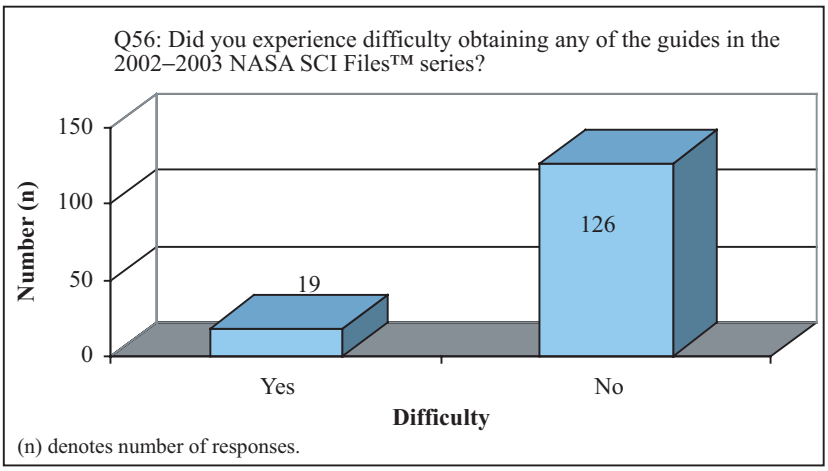

Figure 8. Difficulty obtaining educator guides.

Respondents were also asked about their ability and willingness to use the educator guides if they were offered in alternate electronic formats (fig. 9). A total of 61 respondents indicated that they "could use" the guides on CD, while 59 respondents indicated that they "would use" the educator guides on a CD. When asked about DVD formats for the educator guides, 19 respondents indicated that they "could use" the guides on DVD, and 22 respondents indicated that they "would use" the guides on DVD.

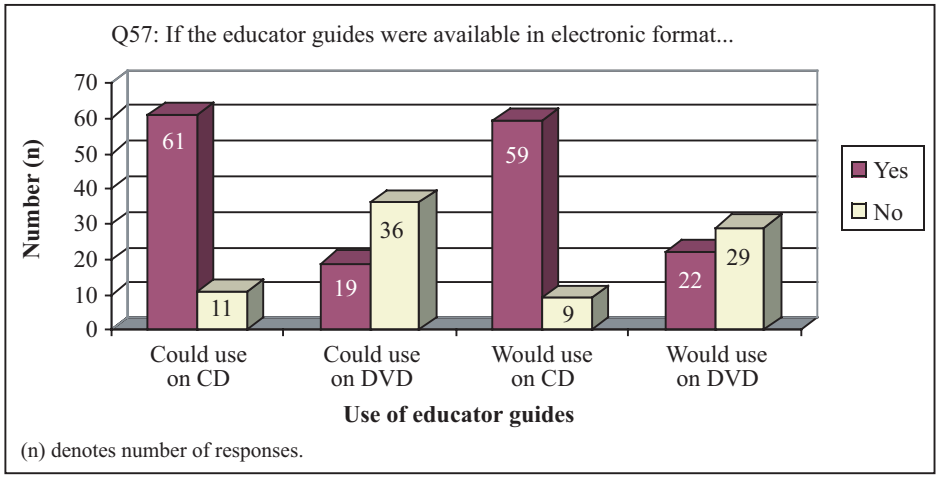

Figure 9. Use of educator guides in alternate electronic formats.

Topic 6. Online Problem-Based Learning Activities

Respondents were asked about the online Problem-Based Learning (PBL) activities. PBL is used to introduce students to scientific inquiry and the scientific method. Respondents rated this statement the highest: "the content of the PBL activities enhanced the integration of mathematics, science, and technology" ($\bar{x}$ = 4.29) and this statement lowest: "the content of the PBL activities was easily integrated into the curriculum" ($\bar{x}$ = 4.26). See table 7.

Table 7. Online Problem-Based Learning Activities

Question: Please indicate the extent to which you disagree or agree with the following statements concerning the problem-based learning activity posted on the NASA SCI Files™ web site.	Mean	Median	Standard deviation	Min.	Max.	Number (n)
The content of the PBL activities was easily integrated into the curriculum.	4.26	4	0.89	1	5	64
The content of the PBL activities enhanced the integration of mathematics, science, and technology.	4.29	5	0.82	1	5	56
The PBL activities raised student awareness of careers that require mathematical, scientific, and technological knowledge.	4.29	4.5	0.86	1	5	59

(n) denotes number of responses.
A 1–5 point scale was used to measure agreement, in which "5" indicates strongly agree.
Min. denotes minimum.
Max. denotes maximum.

Grade Levels Using PBL Activities

Respondents who used the 2002–2003 NASA SCI Files™ program were asked to report which grade levels used the problem-based learning activities (fig. 10). Fifth graders (22 percent) made up the largest percentage of students viewing the 2002–2003 NASA SCI Files™ series, followed by fourth graders (20 percent).

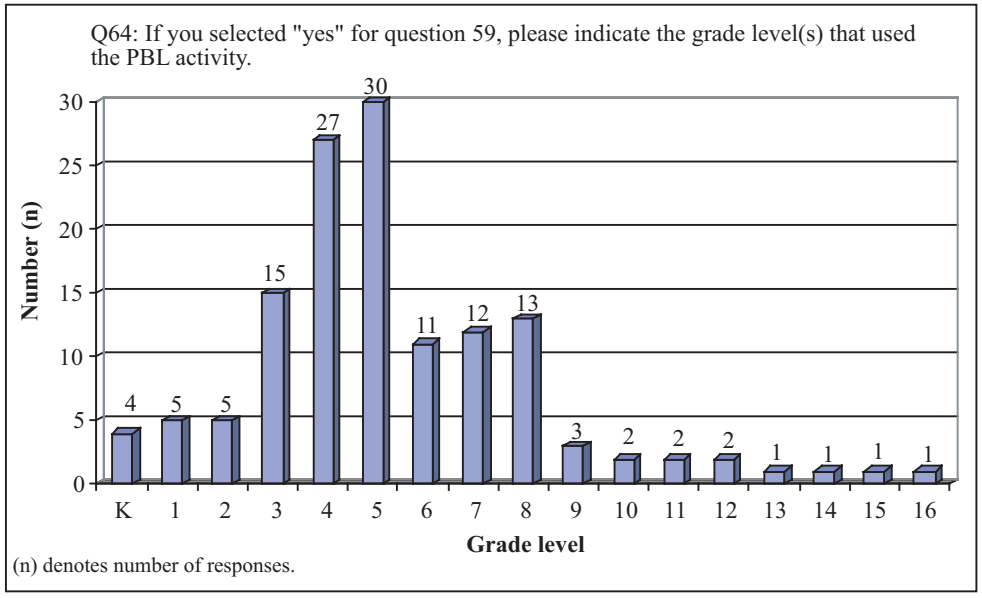

Figure 10. Grade level(s) using PBL activities.

Quality of Online Problem-Based Learning (PBL) Activities

Respondents were asked to indicate the extent to which they agreed/disagreed with the following statements concerning the quality of the Problem-Based Learning (PBL) activities posted on the NASA SCI Files™ web site (table 8). Respondents gave the highest mean rating to these statements: "the PBL activities will likely be revisited/reused" ($\bar{x}$ = 4.51), "the PBL activities enhanced the integration of mathematics, science, and technology" ($\bar{x}$ = 4.44), and "the PBL activities had a good balance of text and graphics" ($\bar{x}$ = 4.40). High scores were also given to the statements "the PBL activities allowed students to work at their own pace" ($\bar{x}$ = 4.31), and "the PBL activities accommodated various learning styles" ($\bar{x}$ = 4.27). Respondents gave the lowest mean rating to the statement "students were able to complete the PBL activities in a reasonable amount of time" ($\bar{x}$ = 4.10).

Table 8. Quality of PBL Activities

Question: Please indicate the extent to which you disagree or agree with the following statements concerning the problem-based learning activity posted on the NASA SCI Files™ web site.	Mean	Median	Standard deviation	Min.	Max.	Number (n)
Students were able to complete the PBL activities in a reasonable amount of time.	4.10	4	.90	2	5	59
The PBL activities accommodated various learning styles.	4.27	4	.85	1	5	62
The content for the PBL activities was appropriate for my students.	4.22	4	.79	1	5	62
The graphics for the PBL activities were appropriate for my students.	4.26	4	.88	1	5	60
The PBL activities enhanced the integration of mathematics, science, and technology.	4.44	5	.77	1	5	65
The PBL activities had a good balance of text and graphics.	4.40	5	.82	1	5	66
The PBL activities allowed students to work at their own pace.	4.31	5	.88	1	5	61
The PBL activities will likely be revisited/reused.	4.51	5	.75	1	5	70

(n) denotes number of responses.
A 1–5 point scale was used to measure agreement, in which "5" indicates strongly agree.
Min. denotes minimum.
Max. denotes maximum.

Topic 7. NASA SCI Files™ Web Site

Respondents were asked to indicate the extent to which they agreed/disagreed with the following statements concerning the 2002–2003 NASA SCI Files™ web site (table 9). Respondents gave the highest mean ratings to these statements: "the web site is designed so that printouts of individual pages are legible" ($\bar{x}$ = 4.40), and "the web pages are visually appealing" ($\bar{x}$ = 4.36). High mean ratings were also given to these statements: "when viewed on a monitor, the web site is clearly legible" ($\bar{x}$ = 4.35) and "the web site has a good balance of text and graphics" ($\bar{x}$ = 4.31). Respondents gave the lowest mean rating to the statement "pages within the web site download quickly" ($\bar{x}$ = 4.03).

Table 9. Quality of Web Site

Question: Indicate the extent to which you agree/disagree with the following statements:	Mean	Median	Standard deviation	Min.	Max.	Number (n)
The NASA SCI Files™ web pages are visually appealing.	4.36	5	0.87	1	5	166
There is a good balance between text and graphics on the web site.	4.31	4	0.87	1	5	162
The web site is easily navigated.	4.20	4	0.94	1	5	169
When viewed on my monitor, the web site is clearly legible.	4.35	5	0.83	1	5	164
The web site is designed so that printouts of individual pages are legible.	4.40	5	0.85	1	5	154
Pages within the web site download quickly.	4.03	4	1.04	1	5	156
The page lengths are appropriate.	4.27	4	0.89	1	5	152
The links to other sites/pages are current.	4.24	4	0.87	1	5	141
The external links provide opportunities for further exploration.	4.28	4	0.87	1	5	154
The web site supports a PBL environment.	4.31	5	0.83	1	5	111
The web site complements the video.	4.29	4	0.85	1	5	139

(n) denotes number of responses.
A 1–5 point scale was used to measure agreement, in which "5" indicates strongly agree.
Min. denotes minimum.
Max. denotes maximum.

Topic 8. Classroom Environment

Instructional Technology Equipment

Respondents were asked about the availability/location of specific kinds of technology in their classrooms, schools, and homes (figs. 11–17). A television, a VCR, a video camera, a laserdisc player, videoconferencing equipment, a computer, and a DVD player were the items specified. The respondents were asked to mark all that applied.

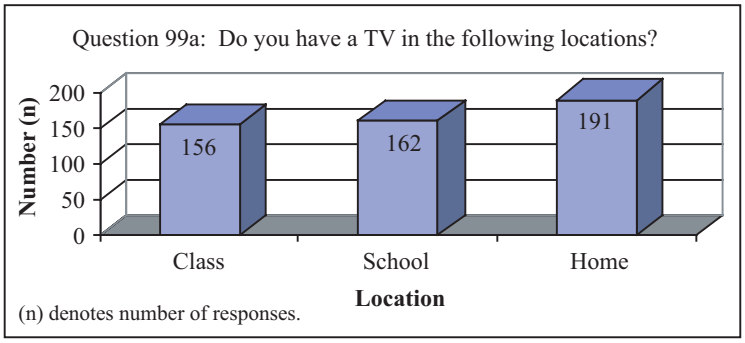

Figure 11. Availability of instructional technology equipment (television).

Television

- **156 respondents** reported having a television in their **classrooms**.
- **162** reported having a television in their **schools.**
- **191** reported having a television in their **homes**.

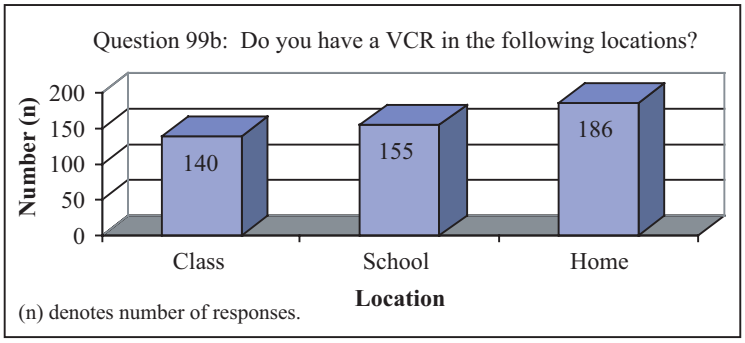

Figure 12. Availability of instructional technology equipment (VCR).

VCR

- **140 respondents** reported having a VCR in their **classrooms**.
- **155** reported having a VCR in their **schools.**
- **186** reported having a VCR in their **homes.**

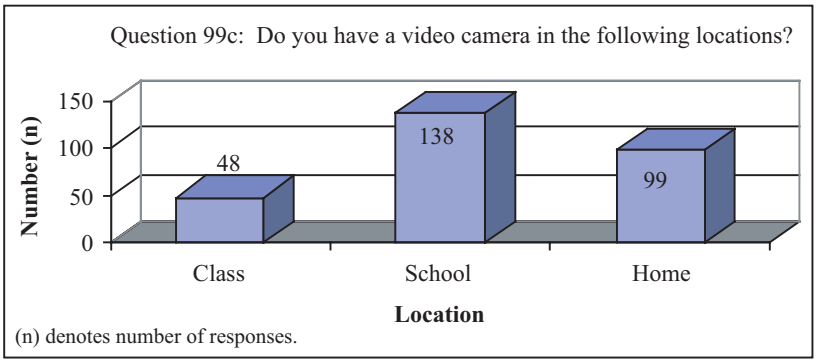

Figure 13. Availability of instructional technology equipment (video camera).

Video Camera

- **48 respondents** reported having a video camera in their **classroom.**
- **138** reported having a video camera in their **schools.**
- **99** reported having a video camera in their **homes.**

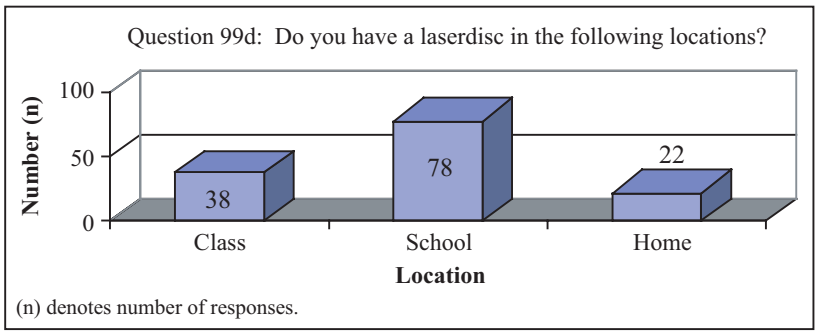

Figure 14. Availability of instructional technology equipment (laserdisc).

Laserdisc

- **38 respondents** reported having a laserdisc in their **classrooms.**
- **78** reported having a laserdisc in their **schools.**
- **22** reported having a laserdisc in their **homes.**

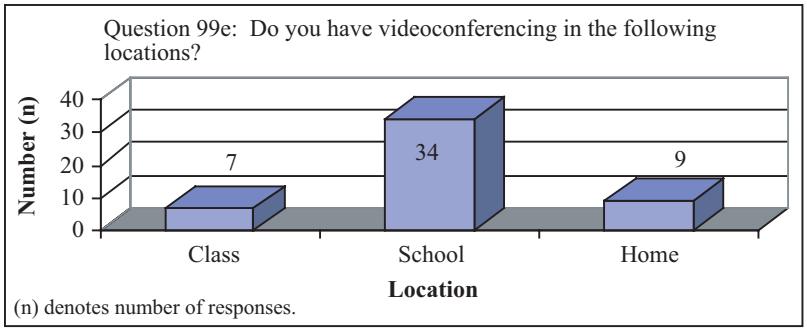

Figure 15. Availability of instructional technology equipment (videoconferencing equipment).

Videoconferencing Equipment

- **7 respondents** reported having videoconferencing equipment in their **classrooms.**
- **34** reported having videoconferencing equipment in their **schools.**
- **9** reported having videoconferencing equipment in their **homes.**

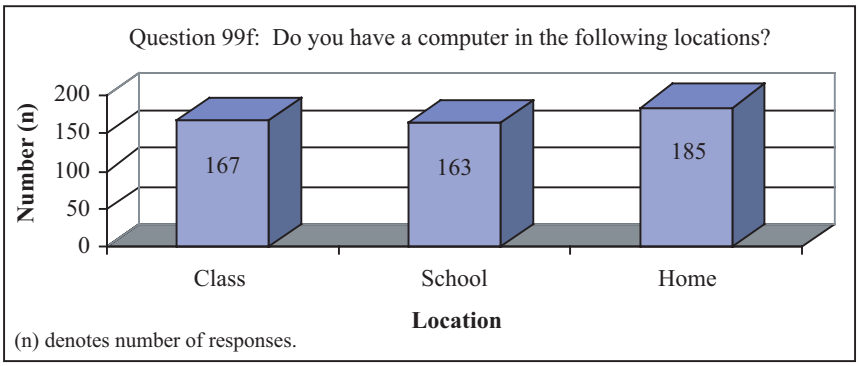

Figure 16. Availability of instructional technology equipment (computer).

Computer

- **167 respondents** reported having a computer in their **classrooms.**
- **163** reported having a computer in their **schools.**
- **185** reported having a computer in their **homes.**

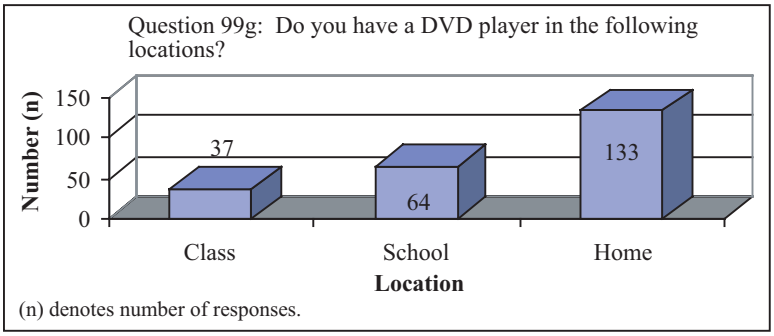

Figure 17. Availability of instructional technology equipment (DVD player).

DVD

- **37** respondents reported having a DVD player in their **classrooms.**
- **64** reported having a DVD player in their **schools.**
- **133** reported having a DVD player in their **homes**

Computer Accessories

Respondents were asked about the availability/location of specific computer accessories (fig. 18). The accessories were a CD-ROM, a LAN, a district-wide network, and an internet connection. The respondents were asked to mark all choices that applied.

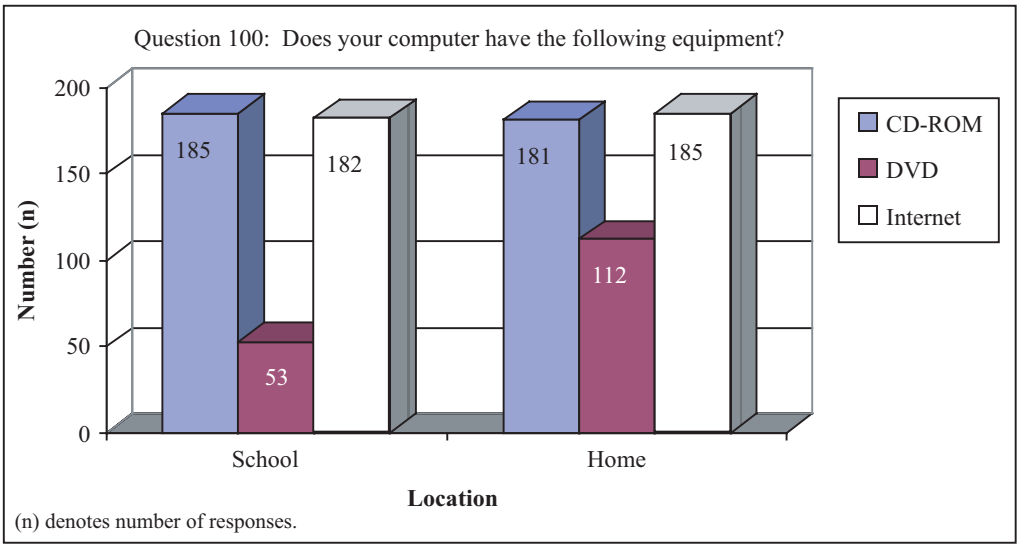

Figure 18. Availability of specific computer accessories.

CD-ROM

- **185 respondents** reported having a CD-ROM in their **schools.**
- **181** reported having a CD-ROM in their **homes.**

Internet

- **182 respondents** indicated having internet access in their **schools.**
- **185** indicated having internet access in their **homes.**

DVD

- **53 respondents** indicated having a DVD player in their **schools.**
- **112** indicated having a DVD player in their **homes.**

School Computer Operating System

Survey respondents were asked to enter a number for how many computers were in their classrooms. The mean number of computers in each classroom was 5.23. Survey respondents were then asked to identify the type of computer operating system used in their schools (fig. 19).

- **37 respondents** reported using **Windows XP**.
- **32** reported using **Windows 2000**.
- **4** reported using **Windows ME**.
- **63** reported using **Windows 98**.
- **10** reported using **Windows 95**.
- **0** reported using **Windows 3.1**.
- **12** reported using **Mac OS X**.
- **15** reported using **Mac OS 9.x**.
- **6** reported using **Mac OS 8.x**.

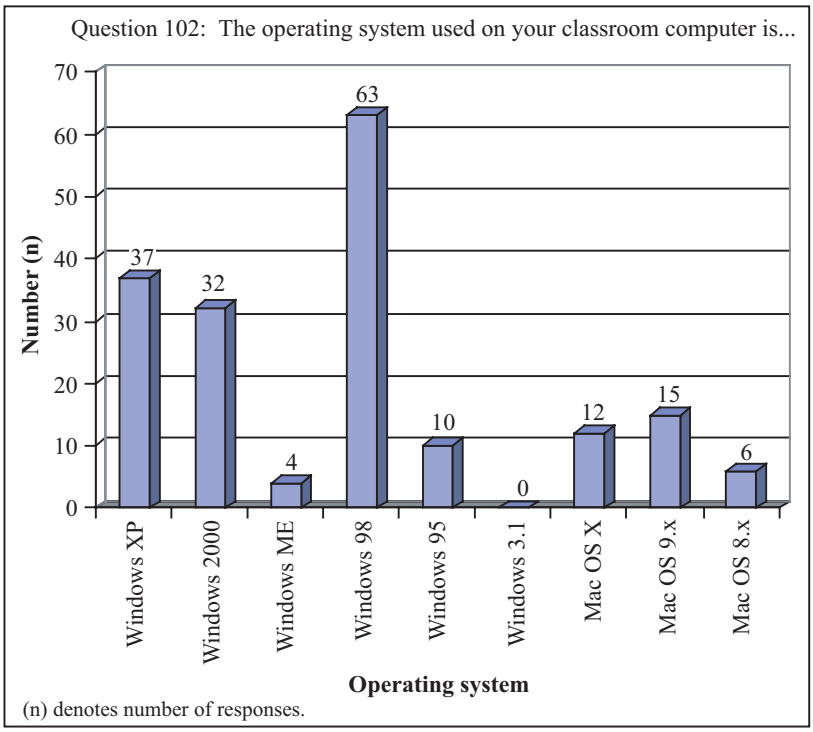

Figure 19. Computer operating systems used in schools.

Student Use of School Computers

Respondents were asked how often a typical student in their schools used a computer during a given month (fig. 20).

- **41 respondents** indicated that students used the computers **1-5 times per month.**
- **47** indicated that students used the computers **6-10 times per month.**
- **39** indicated that students used the computers **11-20 times per month.**
- **39** indicated that students used the computers **21-40 times per month.**
- **20** indicated that students used the computers **over 40 times per month.**

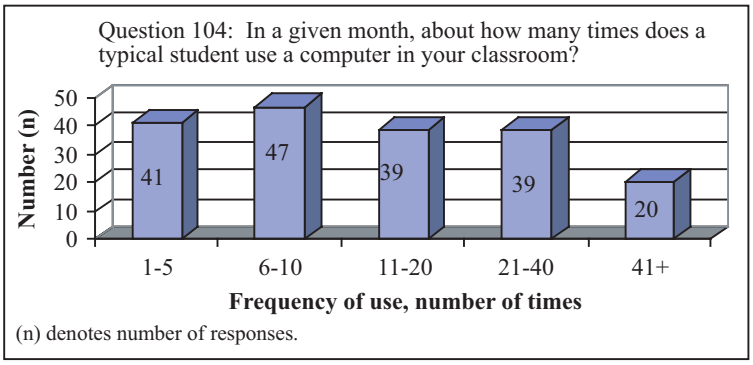

Figure 20. Student use of school computers.

Student-to-Computer Ratio

Survey respondents were asked how the students in their school operated computers in the classroom (fig. 21).

- **74 respondents** reported computer use at a ratio of **1 student per computer**.
- **74** reported computer use at a ratio of **2 students per computer**.
- **22** reported computer use at a ratio of **3 to 5 students per computer**.
- **11** reported computers were generally **used as a class**.

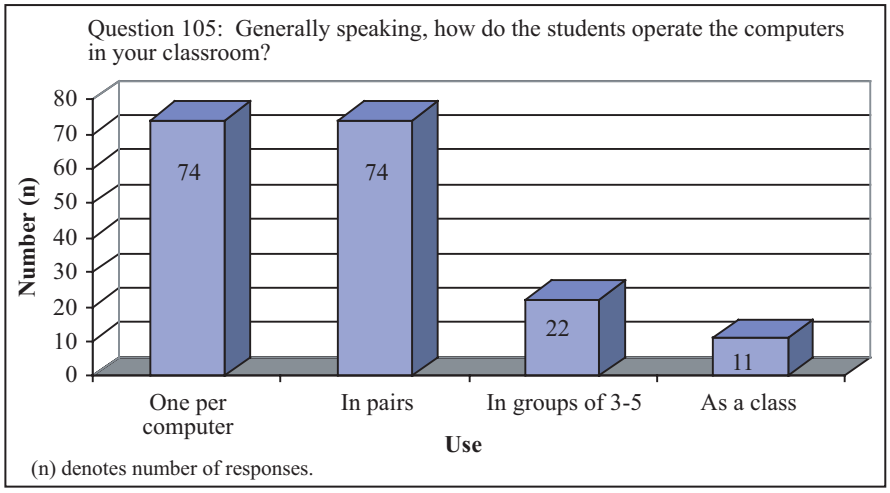

Figure 21. Student-to-computer use in classroom.

Classroom Connection to Internet

Respondents were asked to indicate how the computers in their classrooms are connected to the Internet (fig. 22).

- **8 respondents** reported using a **28.8-K Modem** to connect to the Internet.
- **17** reported using a **56-K Flex Modem** to connect to the Internet.
- **28** reported using a **Cable Modem** to connect to the Internet.
- **81** reported using a **T-1 Line** to connect to the Internet.
- **5** reported **not having an internet connection**.
- **52** reported **not knowing what type** of internet connection was in use.

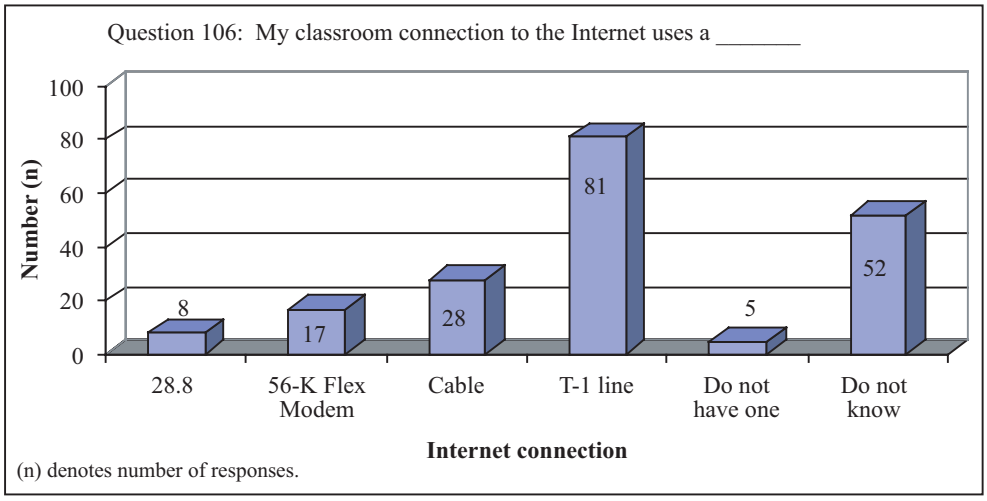

Figure 22. Type of classroom internet connection.

When questioned about the effectiveness of school-based technology training in improving respondents' computer technology skills, respondents indicated moderate effectiveness, rating their school divisions' training with a mean of ($\bar{x}$ = 3.77).

Purposes of Student Computer Use

Survey respondents were given twelve purposes for student computer use and were asked to mark all that applied (fig. 23).

- **166 respondents** indicated computer use for **higher order thinking skills.**
- **129** indicated computer use for **mastering skills just taught.**
- **111** indicated computer use for **remediation of skills.**
- **126** indicated computer use for **expressing ideas in writing.**
- **88** indicated computer use for **communicating electronically with others.**
- **168** indicated computer use for **finding out about ideas and information.**
- **133** indicated computer use for **analyzing information.**
- **122** indicated computer use for **presenting information to an audience.**
- **146** indicated computer use for **improving computer skills.**
- **134** indicated computer use for **learning to work collaboratively.**
- **135** indicated computer use for **learning to work independently.**
- **22** indicated computer use for some **other** purpose.

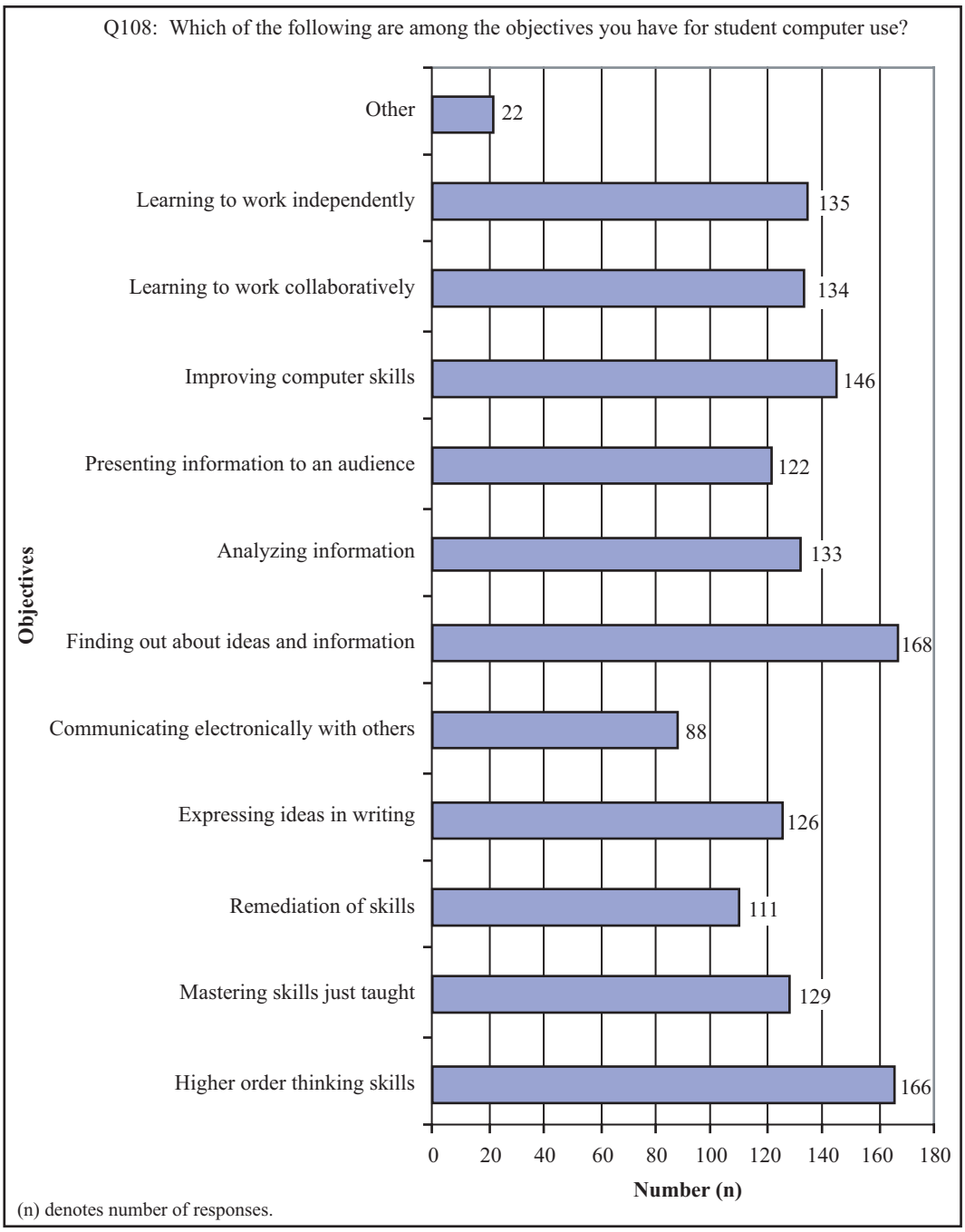

Figure 23. Objectives for student computer use.

Use of Computers for Professional Activities

Educators were asked to identify the ways in which they used computers for lesson preparation or other professional activities and to indicate the frequency of each use (table 10). They were to mark all uses that applied.

Table 10. Use of Computers

Question: Educators used their computers to…	Do not use	Occasionally	Weekly	More often
record/calculate student grades.	44	24	40	84
make handouts for students.	4	43	54	90
correspond to parents.	43	86	35	25
write lesson plans/related notes.	23	36	57	73
get information/pictures from the Internet for lessons.	5	43	48	93
use camcorders, digital cameras, or scanners.	56	79	29	26
exchange files with other teachers (including e-mail and attachments).	27	63	26	74
post student work, resource suggestions, or ideas and opinions on the World Wide Web.	104	51	20	14

Videoconferencing/Virtual Field Trips

Respondents were asked to reply regarding any previous participation on behalf of themselves or their students in an electronic field trip or a videoconference (fig. 24). Of those responding, 62 indicated that they had participated in such an activity, while 127 respondents indicated that they had not.

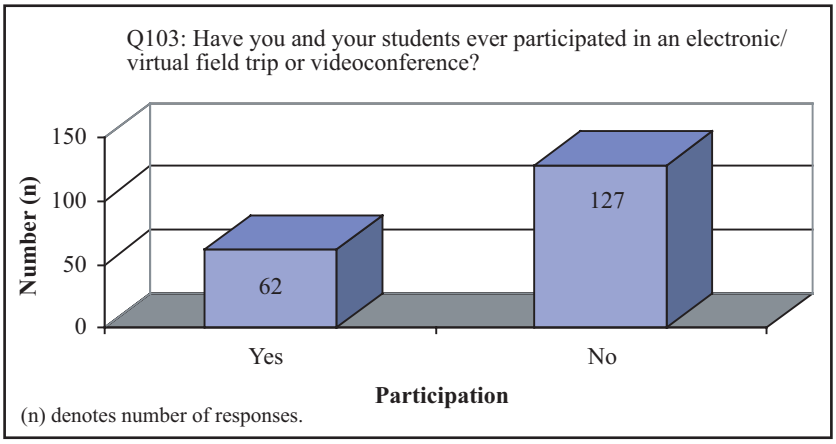

Figure 24. Participation in electronic/virtual field trips or videoconferences.

Interpreting Data

Having presented the survey findings in the previous section, the next step is to interpret them in terms of assessing the quality of the NASA SCIence Files™ distance learning program. Excluding the survey demographics, interpretations of the findings are presented for each of the eight survey topics.

Topic 1. Instructional Technology and Teaching

Based on the data, it is apparent that those surveyed believe that instructional technology increases learning effectiveness and assists in accommodating the different learning styles of students. Those

surveyed also believe that the use of instructional technology increases student motivation and interest, resulting in increased comprehension and learning ability.

Topic 2. Instructional Programming and Technology in Classroom

Recent years have seen a significant increase in the availability and accessibility of instructional technology and programming. Respondents indicated that instructional programming is available and accessible. Despite the dramatic increase in technology in schools, respondents report that computer availability is the greatest barrier to introducing technology in the classroom. Respondents reported that the regimented curriculum is the single largest barrier to using instructional programs in the classroom. As stated in a recent report by the Jason Project, "Caught on the horns of an assessment dilemma, [teachers] are increasingly held accountable for preparing their students to do well on the standardized achievement test, but are expected, at the same time, to teach their students to think critically, explore deep content, and use technology to create project work. Most teachers are reluctant to spend a great deal of time on test preparation recognizing that it impoverishes the curriculum but feel they have little choice" (2002, p. 2). Although teachers are encouraged to use instructional programming, the lack of time for computer projects was reported by respondents to be the second greatest barrier to use of instructional technology programming in the classroom.

Topic 3. Overall Assessment of NASA SCI Files™

The overall assessment of the NASA SCI Files™ series was very positive. The mean responses to questions regarding the overall assessment of the programs in the series were extremely high. Using a 5-point scale, with 5 being the highest value, all values assigned to the questions in this section were 4.23 and higher, resulting in an overall mean of 4.36. Respondents indicated that the content of the programs aligned with national mathematics, science, and technology standards, and that the programs demonstrated the importance of creativity, critical thinking, and problem-solving skills when addressing these disciplines. Respondents also reported that the programs presented workplace mathematics, science, and technology as a collaborative process, and that the programs raised student awareness about careers that require mathematics, science, and technology. These findings are comparable to previous years' evaluations.

Topic 4. Use of NASA SCI Files™ Video Programs

NASA SCI Files™ is designed to enhance instruction of mathematics, science, and technology in grades 3–5. Respondents reported a fairly even response to the use of programs to introduce or reinforce a curriculum topic, objective, or skill; or as a special interest topic. Very few respondents indicated that they had viewed the programs live; the overwhelming majority had taped them, had someone else taped them, or had received copies from NASA for later use.

Two issues identified from the survey that need to be addressed are (1) acquisition of the programs and (2) use of the programs. In terms of accessibility, the percentage of respondents indicating difficulty in receiving the programs dropped significantly for the second season in a row. This result is incredibly positive and may reflect a degree of success with the efforts that were undertaken to reduce technical difficulties and technological barriers.

When asked for which grade levels the programs were being used, respondents indicated that the programs were being used mostly by 4th and 5th graders, but only slightly less frequently by 6th–8th graders.

Clearly, the programs in the series are being used in the grade levels intended by the NASA Center for Distance Learning and also transcend the age barrier by providing quality educational programming for higher age groups as well. Perhaps this result indicates a higher level of quality in the programs so that different benefits can be found that apply to multiple age groups. Put more colloquially, sometimes the best way to say something is also the easiest, and this technique can be seen in the application of the NASA SCI Files™ as an elementary school program and throughout higher levels of the educational spectrum as well.

The goals of the NASA SCI Files™ include (1) using PBL to introduce students to scientific inquiry and the scientific method; (2) providing students the opportunity to simultaneously learn subject matter and develop problem-solving skills while engaging in real world problems; and (3) demonstrating work-place mathematics, science, and technology as a collaborative process while raising student awareness of careers and overcoming students' stereotyped beliefs by presenting women and minorities in challenging careers. These goals are supported by the findings of the Educational Research Service regarding Improving Student Achievement in Science. According to these findings, "Using real-life situations in science instruction through the use of technology (films, videotapes, videodiscs, CD-ROMs) or through actual observation increases student interest in science, problem-solving skills, and achievement" (Cawelti, 1999).

The responses to questions concerning the quality of the NASA SCI Files™ programs were particularly encouraging. The overall mean rating for this section was 4.33. The data suggest that the NASA SCI Files™ is meeting the (previously listed) goals of the series. Respondents indicated that the programs were technically sound; raised student awareness of and demonstrated application of mathematics, science, and technology in the workforce; and managed to do so in an interesting manner.

Topic 5. NASA SCI Files™ Educator Guides

More than half the respondents surveyed reported using the educator guides. They reported that there was a good correlation between the educator guides and the videos, and believed that the educator guides were valuable instructional aids, helping students learn the stated objectives. The lowest scoring question was the inquiry as to ease of downloading the educator guides from the Internet, which may be accounted for in user error, as is confirmed by other inquiries in this evaluation.

Topic 6. Online Problem-Based Learning (PBL) Activities

"PBL is a method based on the principle of using problems as the starting point for the acquisition of new knowledge. Pivotal to its effectiveness is the use of problems that create learning, both through new experience and the reinforcement of existing knowledge" (Lambros, 2002). The NASA SCI Files™ uses PBL to introduce students to scientific inquiry and to the scientific method. Each NASA SCI Files™ program allows students to define the problem, perform research and investigations, formulate a hypothesis, perform experiments, collect and analyze data, draw conclusions, and find solutions to the problem. Overall, the NASA SCI Files™ PBL activities received high ratings for both their quality and content. Moreover, respondents indicated that they were likely to revisit/reuse the PBL activities. Respondents who used the PBL activities indicated that they were beneficial to the integration of mathematics, science, and technology and worked as well to increase awareness of careers that require knowledge of these disciplines. The survey indicated that 5th graders used the PBL activities the most, followed by 4th graders, trailed closely by 3rd and 8th graders. Most respondents felt that the PBL activities were of high quality and were appropriate for the students who used them, giving the Online Problem-Based Learning activities an overall mean rating of 4.30.

Topic 7. NASA SCI Files™ Web Site

Survey respondents were not given the opportunity to list if, or how often, they used the web site, which is something that might be incorporated into future evaluation efforts. Responses to questions about the quality of the web site indicated that it was visually appealing and was integrated with a good balance of text and graphics. Respondents also reported that the web site complemented the NASA SCI Files™ videos as well as the PBL environment. The survey indicated that the web site could be improved by making items download faster, a process which can only be achieved, to a certain extent, on the provider side. Download speed is also related to the connection speed of the internet user. Using a 5-point scale (with 5.0 being the highest), respondents were asked to "rate" the quality of the NASA SCI Files™ web site. The "overall" mean quality rating for the NASA SCI Files™ web site was 4.28. Respondents agreed that the site was visually appealing, easily navigated, and that links to other sites and pages are current.

Topic 8. Classroom Environment

Instructional Technology Equipment

Respondents were asked several questions regarding the availability of specific instructional technology equipment (e.g., VCR, DVD player) in their classroom, school, and home. The answers to these questions could be used to "paint a picture" of the existing technology landscape, to help explain the "use/non-use" of existing technology-based products, and to help plan the introduction of additional technology-based products as part of the NASA SCI Files™ series. Most respondents indicated the presence of a TV, VCR, and a computer in their classroom, school, and home. The more expensive equipment (e.g., videoconferencing equipment and digital cameras) was found in schools and to a far lesser degree in the classroom and home. Newer technology (e.g., DVD player) was found in the home and to a lesser degree in the school and the classroom. What these results don't tell us, however, is the access that teachers have to this equipment; how much, if any, training educators have had using this equipment; how many computers educators may have in their rooms; and the amount of time they have to use a computer or any other technology equipment during the school day.

Computer Accessories

Respondents also were asked about the availability of specific computer equipment/accessories in their classroom, school, and home. Again, the answers to these questions could be used to "paint a picture" of the existing technology landscape, to help explain the "use/non-use" of existing technology-based products, and to help plan the introduction of additional technology-based products as part of the NASA SCI Files™ series, which could potentially include different delivery methods of the programs based upon the technological capabilities in respective classrooms. It is also very apparent that access to the Internet is increasing at an astounding rate in homes, schools, and classrooms, although there is still a segment of the population with no internet connection or very obsolete connections. The school environment is facing globalization just as industrial and political environments are, and there is no reason that these developments should not be used to enhance student learning experiences, as in accordance with the goals and objectives of the NASA SCI Files™.

Student Use of Computers

The survey attempted to determine the number of computers in the classrooms and the type of operating system(s) used by these computers. The average number of computers per classroom was slightly

more than 5. As stated by Laurence Goldberg, "By its very nature, technology lends itself to interactive, bi-directional activities. This is why the insertion of a few computers into the traditional educational model of frontal, unidirectional delivery of facts and instruction has largely not had any substantial effect on learning" (2002, p. 33). Therefore, more computers in the average classroom may lead to a more beneficial use of those computers, both in relation to the NASA SCI Files™ program and to education as a whole.

In terms of types of computer operating systems, 146 respondents reported using PC operating systems, while 37 respondents used Macintosh. We also wanted to know how often a typical student used a classroom computer in a month. About 41 respondents indicated that students typically use a computer 1 to 5 times a month; another 47 respondents reported usage 6 to 10 times a month, while 39 respondents reported a use rate of 11 to 20 times a month. Another 39 respondents reported 21 to 40 times a month, and 20 respondents indicated that students used the computers over 40 times per month. Respondents were asked to report the ratio of computers in their classroom to student use. About 40 percent of the respondents reported general computer usage at a ratio of 1 student per computer. Another 40 percent of the respondents reported a ratio of 2 students per computer, and the remaining respondents were split between 3 to 5 students per computer and "as a class." Finally, we wanted to determine the purpose for which teachers had students use the computer. Of the 11 purposes given, the "top three" were "finding out about ideas and information," followed by "higher order thinking skills," and "improving computer skills." This information is consistent with the top three uses indicated for teacher computer use in both previous NASA SCI Files™ evaluations.

Educators Professional Use of Computers

The training received by teachers and educators is essential to the successful deployment of technology in the classroom (Thomas, 2000). "Today's teachers are asked to integrate technology and to incorporate media into their classes to enhance teaching, while improving student learning. Money is poured into schools to supply labs with state-of-the-art equipment and software. However, all the best intentions in the world are impossible to carry out if teachers are not trained sufficiently, are not comfortable with the software and equipment, and/or do not believe in the benefits of current technology" (Ariza, Knee, and Ridge, 2000). Acknowledging this reality, respondents were asked several questions about training and computer use.

Respondents were asked to rate the helpfulness of the school-based technology training provided by their school or school system. Most reported that the training was moderately helpful. We did not ask respondents, however, if their school or school division offered school-based technology training. Respondents reported that they <u>most often</u> used a computer for such administrative duties as getting information and pictures from the Internet for use in lessons and for making handouts for students, as well as for such educational purposes as writing lesson plans or related notes. In a study conducted by the Center for Research on Information Technology and Organizations, identical findings were reported: "Overall, teachers' most frequent professional uses related to their day-to-day needs—making handouts, keeping records of student grades, and writing lesson plans or notes. Most teachers use computers to make handouts for class on at least a weekly basis. Almost half of all teachers use computers that frequently to record and calculate student grades and to make lesson plans or notes" (Anderson and Ronnkvist, 1999, p. 31). Respondents reported that they <u>least often used</u> computers to operate technology-based equipment, to exchange files with other educators, and to post student work assignments on the World Wide Web.

Concluding Remarks

A self-reported mail survey was sent to individuals randomly selected from the database of NASA SCIence Files™ registrants. Based on the responses, the following facts have been established for the 2002–2003 NASA SCIence Files™ program year. This is the second evaluation cycle of the NASA SCIence Files™ series, which is comparable to previous years' findings, combining for a total of three years' worth of longitudinal trend data. Although there is agreement that schools have greater access to instructional programs and that these instructional programs are of good quality, survey respondents indicated that most of the programs are either too advanced or too basic and are not easily broken into teachable units. Survey respondents also indicated that while greater amounts of instructional technology are entering the classroom, teachers are generally less positive about using it. The greatest barriers to integrating technology into the classroom are (1) not enough or limited access to computers and (2) lack of time in the school schedule for technology (computer-based) projects. The data appear to correlate with data obtained from several large-scale (national) instructional technology studies and indicate that the views held by respondents to this study regarding instructional technology are very similar to those held by their peers.

The NASA SCIence Files™ is a research- and standards-based annual series of 60-minute instructional programs for students in grades 3–5. Programs are designed to introduce students to NASA; to integrate mathematics, science, and technology through the use of Problem-Based Learning (PBL), scientific inquiry, and the scientific method; and to motivate students to become critical thinkers and active problem solvers. Overall, survey respondents agree that (1) the programs in the 2002–2003 series met their stated objectives; (2) the length of the programs (60 minutes) was neither too long nor too short; and (3) the programs are used most often to reinforce a topic, objective, or skill. Survey respondents reported that the educator guides correlated well with the instructional broadcast, that the guides were a valuable aid, and that they were easy to download from the Internet. Survey participants also gave the PBL activities and the NASA SCIence Files™ web site high marks.

According to the survey results, those who participated in the survey consider the NASA SCIence Files™ a beneficial (instructional) resource that enhances and enriches teaching and learning and use it in the manner that is consistent with a resource. For example, (1) the programs are used in grades 3–5; (2) the instructional broadcast is most often taped for use at a later date rather than being used live; (3) some parts of a NASA SCIence Files™ program are used more often than others; and, as an instructional resource, (4) the NASA SCIence Files™ is used most often to reinforce topics, objectives, or skills. Collectively, the data support the continued production of the series. It is important to note that the NASA SCIence Files™ ranks well above average with regard to national trends in instructional technology and programming and is viewed as a valued resource by its users. During the course of the 2003–2004 season, it would be continually effective to evaluate electronically each of the programs in the series. As part of conference attendance and especially as part of any conference presentation, it might be instructive to conduct interviews with educators as a way of (1) learning more about the suitability/usability of the NASA SCIence Files™ and (2) identifying barriers that might prohibit or inhibit its use, such as "a fixed curriculum" or "the amount of time available to teach science." Lastly, it seems that increased use of the programs might result from greater explanation and demonstration of the NASA SCIence Files™; therefore, participation in pre-service and in-service education workshops and as part of technology exhibits might result in increased use.

Collectively, the findings of this report support the continued production of the NASA SCIence Files™.

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Appendix A

NASA SCIence Files™ Evaluation

NASA SCIence Files™ is a research, inquiry, and standards-based, Emmy®-award-winning, series of 60-minute instructional programs for students in grades 3–5 that introduces students to science as inquiry, the scientific method, and problem-based learning. The NASA SCIence Files™ is produced by NASA's Center for Distance Learning, NASA Langley Research Center, Hampton, VA.

Please confirm the following information:

First Name _____
Last Name _____
Address _____
City _____
State _____
Zip _____
Email _____

Instructional Technology and Teaching

Please indicate the extent to which you disagree or agree with the following statements about instructional technology and classroom teaching. ***Please circle your answers.***

1. Enables teachers to teach more effectively. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

2. Enables teachers to accommodate different teaching styles. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

3. Enables teachers to be more creative. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

4. Increases student learning comprehension. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

5. Increases student willingness to discuss content/exchange ideas. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

6. Increases student motivation and enthusiasm for learning. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

7. Is effective with virtually all types of students. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

Instructional Programming and Technology in the Classroom

Please indicate the extent to which you disagree or agree with the following statements about instructional programming and technology. ***Please circle your answers.***

8. Increasingly, schools have greater access to instructional programs. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

9. Most of these programs are of good quality. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

10. Most of these programs are appropriate for my students. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

11. Most of these programs are easily broken into "teachable" units. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

12. Administrators support and encourage teachers to use instructional technology in the classroom. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

13. Classrooms are growing increasingly rich in instructional technology. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

14. Teachers are generally positive about introducing/using instructional technology in the classroom. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

15. Which of the following factors are barriers to integrating technology into your instructional program? ***Check all that apply.***

____ **Not enough or limited access to computers**

____ **Not enough computer software**

____ **Purchased software has not been installed**

____ **Lack of time in school schedule for technology projects**

____ **Lack of technical support for technology projects**

____ **Lack of teacher training opportunities for technical projects**

____ **Lack of knowledge concerning methods of integrating technology into the curriculum**

16. Do you use instructional programming in your classroom?

____ **Yes**

____ **No - Go to Q21**

17. Compared to other instructional programming, the quality of NASA SCI Files™ is

____ **Better than average**

____ **About average**

____ **Worse than average**

____ **I'm unable to judge**

18. Compared to the curriculum/teacher guides in other instructional programming, the quality of the NASA SCI Files™ curriculum/teacher guide is

____ **Better than average**

____ **About average**

____ **Worse than average**

____ **I'm unable to judge**

19. Compared to the video in other instructional programming, the quality of the video in NASA SCI Files™ is

____ **Better than average**

____ **About average**

____ **Worse than average**

____ **I'm unable to judge**

20. Compared to the web-based activities in other instructional programming, the quality of the web-based activities in NASA SCI Files™ is

____ **Better than average**

____ **About average**

____ **Worse than average**

____ **I'm unable to judge**

Television/Video Programs

The following questions pertain to the nine programs in the 2002–2003 NASA SCI Files™ series.

21. Did you use the following programs? ***Please check your responses for Questions 21–25.***

Program	Yes	No	No, but I may in the future
1. The Case of the Powerful Pulleys	___	___	___
2. The Case of the Mysterious Red Light	___	___	___
3. The Case of the Shaky Quake	___	___	___
4. The Case of the "Wright" Invention	___	___	___
5. The Case of the Barking Dogs	___	___	___
6. The Case of the Inhabitable Habitat	___	___	___
7. The Case of the Biological Biosphere	___	___	___
8. The Case of the Phenomenal Weather	___	___	___
9. The Case of the Galactic Vacation	___	___	___

22. If you selected "yes," please indicate how these programs were viewed. ***Please check.***

	1	2	3	4	5	6	7	8	9
a. To introduce a curriculum topic, objective, or skill	__	__	__	__	__	__	__	__	__
b. To reinforce a curriculum topic, objective, or skill	__	__	__	__	__	__	__	__	__
c. As a special interest topic	__	__	__	__	__	__	__	__	__
d. As a break from classroom routine	__	__	__	__	__	__	__	__	__

23. If you selected "yes," for question 21, please indicate how these programs were viewed ***Please check.***

	1	2	3	4	5	6	7	8	9
a. Live	—	—	—	—	—	—	—	—	—
b. Taped	—	—	—	—	—	—	—	—	—
c. Both	—	—	—	—	—	—	—	—	—
d. Not viewed	—	—	—	—	—	—	—	—	—

24. How did you receive the programs? ***Please check.***

	Yes	No
1. PBS/ITV	___	___
2. Downloaded it	___	___
3. Media Specialist taped it	___	___
4. I or someone else taped it	___	___
5. NASA sent me the tapes	___	___
6. Other	_____	

25. Did you experience difficulty obtaining any of the programs in the 2002–2003 NASA SCI Files™ series? ***Please check.***

____ **Yes**

____ **No**

26. If you selected "yes" for question 16, please indicate the grade level(s) that viewed the programs. ***Please circle your answers.***

K 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Please indicate the extent to which you disagree or agree with the following statements concerning the nine programs in the 2002–2003 NASA SCI Files™ series. ***Please circle your answers.***

27. The programs were well organized. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

28. The programs were of good technical quality. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

29. The programs made "learning science" interesting. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

30. The programs increased your students' knowledge of science. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

31. The programs presented a "problem-based learning" environment. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

32. The programs stressed the importance of information literacy skills. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

33. The programs increased student willingness to discuss/exchange ideas. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

34. The programs increased student enthusiasm for learning. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

35. The programs were effective with virtually all types of students. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

36. The programs were a valuable instructional aid. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

37. The programs were developmentally appropriate for the grade level. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

38. The programs were easily incorporated into the curriculum. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

39. The programs enhanced the integration of mathematics, science, and technology in the classroom. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

40. The programs raised student awareness of careers that require mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

41. The programs demonstrated the application of mathematics, science, and technology on the job. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

42. The programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

43. The programs stressed the importance of information technology skills. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

44. The programs presented women and minorities performing challenging engineering and scientific tasks. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

45. The programs were a positive link between the lesson guide and the web site. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

46. The length of the program (60 minutes) is?

____ too short

____ just right

____ too long

Educator Guides

47. Did you use the educator guides for the following programs? ***Please check.***

Program	Yes	No	No, but I may in the future
1. The Case of the Powerful Pulleys	___	___	___
2. The Case of the Mysterious Red Light	___	___	___
3. The Case of the Shaky Quake	___	___	___
4. The Case of the "Wright" Invention	___	___	___

5. The Case of the Barking Dogs ___ ___ ___

6. The Case of the Inhabitable Habitat ___ ___ ___

7. The Case of the Biological Biosphere ___ ___ ___

8. The Case of the Phenomenal Weather ___ ___ ___

9. The Case of the Galactic Vacation ___ ___ ___

48. If no, please explain and then proceed to Question 59.

Please indicate the extent to which you disagree or agree with the following statements concerning the printed educator guides used for the nine programs in 2002–2003 NASA SCI Files™ series. ***Please circle your answers.***

49. The educator guides correlated with the video. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

50. The activities worksheet helped your students learn the "stated" learning objectives. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

51. The directions/instructions in the educator guides were easily understood. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

52. The layout of the educator guides presented the information clearly. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

53. The educator guides were a valuable instructional aid. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

54. The print and electronic resources in the educator guides were a valuable instructional aid. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

55. The educator guides were easy to download from the Internet. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

56. Did you experience difficulty obtaining any of the guides in the 2002–2003 NASA SCI Files™ series?

____ **Yes**

____ **No**

57. If the educator guides were only available in electronic format, ***Please check.***

	Yes	No
could you use them on CD-ROM?	___	___
could you use them on DVD?	___	___
would you use them on CD-ROM?	___	___
would you use them on DVD?	___	___

58. Please add any other comments you have concerning the educator guides.

Online Problem-Based Learning (PBL) Activity

59. Did you use the PBL activity for the following programs? ***Please check.***

Program	Yes	No	No, but I may in the future
1. The Case of the Powerful Pulleys	___	___	___
2. The Case of the Mysterious Red Light	___	___	___
3. The Case of the Shaky Quake	___	___	___
4. The Case of the "Wright" Invention	___	___	___
5. The Case of the Barking Dogs	___	___	___
6. The Case of the Inhabitable Habitat	___	___	___
7. The Case of the Biological Biosphere	___	___	___
8. The Case of the Phenomenal Weather	___	___	___
9. The Case of the Galactic Vacation	___	___	___

60. If no, please explain and then proceed to Question 74.

Please indicate the extent to which you disagree or agree with the following statements concerning the PBL activity posted on the NASA SCI Files™ web site.

61. The content of the PBL activity was easily integrated into the curriculum. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

62. The content of the PBL activities enhanced the integration of mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

63. The PBL activities raised student awareness of careers that require mathematical, scientific, and technological knowledge. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

64. If you selected "yes" for question 59, please indicate the grade level(s) that used the PBL programs. ***Please circle your answers.***

K 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

65. Students were able to complete the PBL activities in a reasonable amount of time. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

66. The PBL activities accommodated various learning styles. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

67. The content for the PBL activities was appropriate for my students. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

68. The graphics for the PBL activities were appropriate for my students. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

69. The PBL activities enhanced the integration of mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

70. The PBL activities had a good balance of text and graphics. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

71. The PBL activities allowed my students to work at their own pace. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

72. The PBL activities will likely be revisited/reused. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

73. Please add any other comments you have concerning the PBL activity.

NASA SCI Files™ Web Site

The following questions pertain to the web site for the 2002–2003 NASA SCI Files™ series. Please circle your answers to indicate the extent to which you disagree or agree with the following statements.

74. The NASA SCI Files™ web site is visually appealing. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

75. There is a good balance between text and graphics on the web site. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

76. The web site is easily navigated. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

77. Compared to other web sites, when viewed on my monitor, the web site is clearly legible. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

78. The web site is designed so that printouts of individual pages are legible. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

79. Pages within the web site download quickly. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

80. The page lengths are appropriate. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

81. The links to other sites/pages are current. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

82. The external links provide opportunities for further exploration. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

83. The web site supports a PBL environment. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

84. The web site complements the broadcast/video. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

85. Please add any comments you have concerning the NASA SCI Files™ web site.

Overall Assessment

Please indicate the extent to which you disagree or agree with the following statements concerning the nine programs in the 2002–2003 NASA CONNECT™ series.

86. The goals and objectives of the series were met. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

87. The program was developmentally appropriate for the grade level. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

88. The program content was aligned with the national mathematics, science, and technology standards. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

89. The program content was easily integrated into the curriculum. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

90. The program content enhanced the teaching of mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

91. The programs raised student awareness about careers that require mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

92. The programs presented the application of mathematics, science, and technology on the job. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

93. The programs presented workplace mathematics, science, and technology as a collaborative process. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

94. The programs presented mathematics, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

95. The programs presented women and minorities performing challenging engineering and science tasks. (1=strongly disagree; 5=strongly agree)

1 2 3 4 5 No Opinion

96. Have you recommended NASA SCI Files™ to a colleague?

____ Yes

____ No

97. One goal of the NASA SCI Files™ is to educate and inform others about what NASA does. Do you think NASA SCI Files™ has been successful in this regard?

____ Yes

____ No

98. In your opinion is the information about NASA contained in NASA SCI Files™

____ Very credible

____ Somewhat credible

____ Not credible

____ I'm unable to judge

Computers and Associated Technology

The following questions pertain to your classroom, your school, and your home.

99. Do you have the following equipment in your _____? ***Please check all that apply.***

	Classroom	School	Home
Television	____	____	____
VCR	____	____	____
Video Camera	____	____	____
Laserdisc Player	____	____	____
Computer	____	____	____
DVD	____	____	____
Videoconferencing	____	____	____

100. Does your school or home computer have the following? ***Please check all that apply.***

	School	Home
CD-ROM	____	____
Internet connection	____	____
DVD	____	____

101. How many computers are in your classroom? _____ (If "0," please proceed to question 107.)

102. The operating system used on your classroom computer is

____ **Windows XP**
____ **Windows 2000**
____ **Windows ME**
____ **Windows 98**
____ **Windows 95**
____ **Windows 3.1x**
____ **Mac OS X**
____ **Mac OS 9.x**
____ **Mac OS 8.x**
____ **Other**
____ **I don't know**

103. Have you and your students ever participated in an electronic/virtual field trip or videoconference?

____ **Yes**

____ **No**

104. In a given month, about how many times does a typical student use a computer in your classroom? ***Please check.***

____ **1–5**

____ **6–10**

____ **11–20**

____ **21–40**

____ **41+**

105. Generally speaking, how do the students operate the computers in your classroom? ***Please check.***

____ **One student per computer**

____ **In pairs (2)**

____ **In groups of 3–5**

____ **In a class**

____ **Other**

106. My classroom connection to the Internet uses a _____? ***Please check.***

____ **28.8 modem**

____ **56-K flex modem**

____ **cable modem**

____ **T-1 line or higher**

____ **Do not have one**

____ **Do not know**

107. The school-based technology training provided by my school division improved my computer technology skills. ***Please circle your answer.***

1 2 3 4 5 No school-based training provided No Opinion

108. Which of the following are among the objectives you have for student computer use?
Please check all that apply.

____ **Higher order thinking skills**
____ **Mastering skills just taught**
____ **Remediation of skills not learned well**
____ **Expressing ideas in writing**
____ **Communicating electronically with others**
____ **Finding out about ideas and information**
____ **Analyzing information**
____ **Presenting information to an audience**
____ **Improving computer skills**
____ **Learning to work collaboratively**
____ **Learning to work independently**
____ **Other**

109. In which of these ways do you use computers to prepare lessons or in other professional activities?
Please check.

a. To record or calculate student grades

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

b. To make handouts for students

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

c. To correspond with parents

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

d. To write lesson plans or related notes

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

e. To get information or pictures from the Internet for use in lessons

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

f. To use camcorders, digital cameras, or scanners to prepare for class

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

g. To exchange computer files with other teachers (including email and attachments)

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

h. To post student work, suggestions for resources, or ideas and opinions on the World Wide Web

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

Demographics

These questions will be used to determine whether survey respondents with different backgrounds and characteristics have different opinions regarding instructional technology and NASA SCI Files™.
Please check the appropriate response.

110. Gender?

____ **Female**

____ **Male**

111. Present professional duties? ***Please check all that apply.***

____ **Teacher**

____ **Home Schooler**

____ **Technology Program Coordinator**

____ **Principal**

____ **Math Coordinator**

____ **Science Coordinator**

____ **Librarian/Media Specialist**

____ **Community College Instructor**

____ **College/University Instructor**

____ **Distance Learning Coordinator**

____ **Curriculum Coordinator**

____ **Other**

112. School type? ***Please check only one.***

____ **Public**

____ **Private/Parochial**

____ **Native American School**

____ **Home School**

____ **Community College**

____ **College/University**

113. School location? ***Please check only one.***

____ **Rural**

____ **Suburban**

____ **Urban**

114. Highest degree?

____ **High School Diploma**

____ **Associate's (2-Year)**

____ **Baccalaureate (BA/BS)**

____ **Master's/Master's Equivalency**

____ **Education Specialist**

____ **Doctorate**

115. Ethnicity? ***Please check only one.***

____ **African American**

____ **Asian**

____ **Caucasian**

____ **Hispanic**

____ **Native American**

____ **Pacific Islander**

____ **Other**

116. How many years have you been a professional educator or home schooler? _____

117. Your age. _____

118. Do you own a personal computer?

____ **Yes**

____ **No**

119. Are you a member of a professional (national) education organization (e.g., ASDC, NMSA, NCTM, NSTA)?

____ **Yes**

____ **No**

Thank you for your time in completing this survey. Your input is very valuable to us and will help us improve the quality of NASA SCI Files™.

Responsible NASA Official: Dr. Thomas E. Pinelli
Page Curator: Clyde Lewis
Last Updated: July 10, 2003
Privacy Policy

Appendix B

National Aeronautics and Space Administration
Langley Research Center
Hampton, VA 23681-2199

Educational Product	
Educators	Grades 3-5

ET-2002-04-05-LARC

The NASA SCI Files™

Inspiring the next generation of explorers as only NASA can.

http://scifiles.larc.nasa.gov

Season 2002-2003

The NASA SCIence Files™ is an annual series of FREE Emmy® award-winning instructional programs consisting of broadcast, print, and online elements. Emphasizing research and standards-based instruction, Problem-Based Learning, and scientific inquiry, the series seeks to motivate students in grades 3-5 to become critical thinkers and active problem solvers. Each program supports the national mathematics, science, and technology standards and has three components that include (1) a 60-minute television broadcast, which can be viewed live or taped for later use; (2) a companion educator's guide; and (3) an interactive web site featuring a Problem-Based Learning activity that enables students to further explore topics presented in the broadcast. The web site also contains a wealth of instructional resources.

1 Register

Register online at **scifiles.larc.nasa.gov**

2 Access

There are several ways to obtain the television broadcast:

- NASA SCIence Files™ air on PBS, NASA TV, and on many cable access and ITV channels. Check our web site for viewing in your locality
- The programs are uplinked in KU and C band via satellite. The satellite coordinates are listed on the NASA SCIence Files™ web site.
- Programs are available on the web through NASA's Learning Technologies Channel, **http://quest.nasa.gov/events/sci/index.html**
- Video copies of the broadcast can be obtained from the NASA Educator Resource Center in your state, **http://education.nasa.gov/ercn** or from the NASA Central Operation of Resources for Educators, **http://core.nasa.gov**

Visit the web site, **http://scifiles.larc.nasa.gov** to download the lesson guides and locate the web activities.

3 Integrate

Integrate the television broadcast, hands-on activities in the guide and the web activity into your classroom to enhance and extend our curriculum.

1 The Case of the Powerful Pulleys

Starts Airing: Wed., Sept. 25, 2002
11 a.m.-12 Noon EDT

One of the tree house detectives has had an accident and cannot get into the tree house. Using Problem-Based Learning, the rest of the gang investigates the world of simple machines and physical science and "pulls" together to get everyone into the tree house.

Math Standards: Measurement, Problem Solving, and Representation

Science Standards: Science and Inquiry; Physical Science; Science and Technology

Technology Standards: Basic Operations and Concepts; Social, Ethical, and Human Issues; Technology Productivity Tools; Technology Communication Tools; Technology Research Tools; and Technology Problem-Solving and Decision-Making Tools

2 The Case of the Mysterious Red Light (R)

Starts Airing: Wed., Oct. 16, 2002
11 a.m.-12 Noon EDT

Have you ever seen an unusually bright red sunrise or sunset and wondered why? That's exactly what happens as the tree house detectives accept the challenge of trying to find the source of the strange red light.

Math Standards: Measurement, Problem Solving, and Representation

Science Standards: Science and Inquiry; Physical Science; Earth and Space Science; Science and Technology

Technology Standards: Basic Operations and Concepts; Social, Ethical, and Human Issues; Technology Productivity Tools; Technology Communication Tools; Technology Research Tools; and Technology Problem-Solving and Decision-Making Tools

3 The Case of the Shaky Quake

Starts Airing: Wed., Nov. 20, 2002
11 a.m.-12 Noon ET

Troubled by a strange tremor in the area, the tree house detectives investigate earthquakes. Join them as they delve into geography, geology, and plate tectonics to discover why they're "all shook up."

Math Standards: Measurement, Problem Solving, and Representation

Science Standards: Science and Inquiry; Physical Science; Science and Technology

Technology Standards: Basic Operations and Concepts; Social, Ethical, and Human Issues; Technology Productivity Tools; Technology Communication Tools; Technology Research Tools; and Technology Problem-Solving and Decision Making Tools

4 The Case of the "Wright" Invention (R)

Starts Airing: Wed., Dec. 11, 2002
11 a.m.-12 Noon ET

Travel back in time with the tree house detectives to learn about the invention process from two of the greatest inventors, Orville and Wilbur Wright. The tree house detectives find that inventing is not as easy as it seems, and it really does take the "Wright" stuff to be a good inventor.

Math Standards: Measurement; Data Analysis and Probability; Problem Solving

Science Standards: Science and Inquiry; Physical Science; Science and Technology

Technology Standards: Basic Operations and Concepts; Social, Ethical, and Human Issues; Technology Productivity Tools; Technology Communication Tools; Technology Research Tools; and Technology Problem-Solving and Decision-Making Tools

5 The Case of the Barking Dogs (R)

Starts Airing: Wed., Jan. 22, 2003
11 a.m.-12 Noon ET

The tree house detectives accept the challenge of determining why dogs have unexpectedly started barking in the morning and late at night. The detectives learn about sound, what it is, how it is transmitted, and how human beings and animals hear.

Math Standards: Algebra; Geometry; Measurement; Data Collection and Analysis, Connections, and Representation

Science Standards: Science and Inquiry; Physical Science; Life Science; Science and Technology

Technology Standards: Basic Operations and Concepts; Social, Ethical, and Human Issues; Technology Communication Tools; and Technology Research Tools

6 The Case of the Inhabitable Habitat (R)

Starts Airing: Wed., Feb. 19, 2003
11 a.m.-12 Noon ET

Come help the tree house detectives as they enter a contest to design a habitat that will sustain life on Mars. Join them as they learn about various habitats on land, in the water, and even in space.

Math Standards: Measurement; Data Analysis and Probability; Problem Solving

Science Standards: Science and Inquiry; Life Science; Earth and Space Science; Science and Technology

Technology Standards: Basic Operations and Concepts; Social, Ethical, and Human Issues; Technology Productivity Tools; Technology Communication Tools; Technology Research Tools; and Technology Problem-Solving and Decision-Making Tools

7 The Case of the Biological Biosphere

Starts Airing: Wed., Mar 19, 2003
11 a.m.-12 Noon ET

One of the tree house detectives is about to take a trip to foreign shores and is both excited and concerned. This is a chance of a lifetime, and he doesn't want to get sick and miss the trip. The detectives learn about the human body as they discover that no man is an island, not even a kid.

Math Standards: Measurement; Data Analysis and Probability; Problem Solving;

Science Standards: Science and Inquiry; Life Science; Earth and Space Science; Science and Technology

Technology Standards: Basic Operations and Concepts; Social, Ethical, and Human Issues; Technology Productivity Tools; Technology Communication Tools; Technology Research Tools; and Technology Problem-Solving and Decision-Making Tools

8 The Case of the Phenomenal Weather (R)

Starts Airing: Wed., April 9, 2003
11 a.m.-12 Noon ET

Join the tree house detectives as they plan a trip to Florida and encounter problems trying to predict the weather. Learn about violent storms, such as hurricanes and tornadoes, weather fronts, global wind patterns, and climates.

Math Standards: Geometry; Measurement; Data Analysis and Probability; Problem Solving

Science Standards: Science and Inquiry; Life Science; Earth and Space Science; Science and Technology

Technology Standards: Basic Operations and Concepts; Social, Ethical, and Human Issues; Technology Productivity Tools; Technology Communication Tools; Technology Research Tools; and Technology Prolem-Solving and Decision-Making Tools

9 The Case of the Galactic Vacation

Starts Airing: Wed., May 14, 2003
11 a.m.-12 Noon ET

The tree house detectives go galactic with their latest project, creating travel brochures for our solar system. What do you pack for a weekend on Jupiter or a spring on Saturn? Find out as the tree house detectives explore life beyond the atmosphere.

Math Standards: Geometry; Measurement; Data Analysis and Probability; Problem Solving

Science Standards: Science and Inquiry; Life Science; Earth and Space Science; Science and Technology

Technology Standards: Basic Operations and Concepts; Social, Ethical, and Human Issues; Technology Productivity Tools; Technology Communication Tools; Technology Research Tools; and Technology Problem-Solving and Decision-Making

The NASA SciFiles™

(R) Indicates a repeat program from the 2001-2002 season. **2002-2003 Series • Grades 3 - 5 • http://scifiles.larc.nasa.gov** CC

Appendix C

The responses below were given as "Other" means by which respondents received the program.

Purchased from CORE
Do not know how. I home school.
No access to the tapes. Used the curriculum only
We have our own satellite and receiver so I tape them.
NASA did not send me all the tapes, or for some reason they were not sent to my new school address. I received some at Essrig Elementary, but after Jessie left her job I didn't receive any more. I guess Sarah Jordan didn't get my new address or something happened to break down communications.
Our satellite system is currently not working. I used activities from the teacher's guide, instead.
I am unaware of this program but would be most interested to find out about it.
I received tapes at a summer NASA teacher camp.
Satellite - We The District ITV broadcast it to the schools - NASA sent coordinates to us.
I was unable to get the programs because my school does not receive that particular band; however, I do have the NASA channel at home and was wondering if these programs do come on that channel and at what times.
going to get the tapes
I would love for NASA to send me the tapes. My problem has been obtaining the programs.
My area wouldn't carry it. I used the printouts though.
We could not get the station to hook up our school system—I begged—so I'm disappointed that we could not tape the series!
Participated in the NASA S'COOL and received copies.
I ordered the tapes.
I haven't started any programs yet—still waiting for all the info...
We had problems with access this year due to building improvements and changes.
I scheduled these programs over our ITFS closed-circuit for teachers/librarians to use.
Unable to get tapes or record.
We were not able to tape it on our county school TV system.
I was unable to obtain the program. My local PBS station has not had it on the schedule this year. yet. I'm still hoping to get it.
We watched older programs from PBS programming, then downloaded the lesson plans.
Was not able to obtain videos - very much would like to get copies - only had paper copies of of unit.
I was sent the hard copy and used that but did not view the programs.
We could not obtain it.
Did not use videos but did the paper work.
I'm not sure how to receive the programs.
ERC
Our media center lost the case of blank video tapes they require I send them in return for the taped

programs.
Downlinked from satellite
I did not receive access to the tapes.
Unable to receive the programs
I do not have the capability of taping from the satellite broadcast in this county.

When asked why users did not use the lesson guides in question, respondents provided the comments below.

I only received 1 teacher's guide. However, I was able to download some of the other guides from the Internet.
forget number 10.
I used some of the ideas and adapted it to a 3rd grade level for my particular students.
Does not fit into the curriculum
If I had received the materials and the tapes, I would have used them; all the programs are excellent!
not a topic of our curriculum
We were unable to receive the programs.
The lessons that I have not and will probably not use are not covered in the essential knowledge required for the Virginia SOLs for third grade.
No guides were received. The downloads wouldn't work...I was clicked out of the site.
downlinked for the teaching staff
I am not a classroom teacher. I have copies of the guides that I provide to teachers in our district.
I used the guides to help find the appropriate Florida Sunshine State Standards requirements.
My service-connected VA Rehabilitation Program did not provide me with the TV that I requested and that was a great disappointment.
I was not able to tape or view the shows. I could not find any way to tape and did not receive information that they were on PBS. I would love to get copies.
I have all ready explained in previous question.
I pass the information on to the classroom teachers.
We experienced Internet problems the several times I tried to use the lessons so I never was able to effectively use them. Time seemed to be an issue for my class. The lessons seem well thought out and I would like to try to use them, but I think it might be a challenge for my gifted 3rd graders to use it.
I am not an instructional teacher; I just viewed the programs for recommendation.
need to get the videos first
Some guides came after or before I teach the material, thus using them next year is a better option. I would have reviewed the material if I could have received the video transmission in this area.
Used student response to guide activity
signed up too late to participate
did not have time in the classroom but I definitely will use them at some point. I did have some

trouble with getting the programs taped.
Our school could not get the program videos on PBS! Help! it was impossible to tape them and we do not have the money to purchase them!
We are an educational access TV station.
I probably won't use the tapes.
I was unable to incorporate the programs into my newly assigned classroom, due to age level and lack of significant time for new instructional programs. Also, I was unable to get the video tapes.
I have looked at these for a science co-op class that we'll be teaching in a home school environment next year with a group of families with kids grades 5-8. I'm very impressed with the materials so far, but have not actually had the opportunity to use them yet. By the end of the year, I'll be much better able to answer these questions.
Those lessons are not related to the objectives I must teach in science.
Have not received any guides–was able to copy one from friend
I just scheduled the programs for use. This evaluation has been sent out to teachers.
unable to get tapes or record
I never received any lesson guides.
I am still trying to locate the video and am waiting to use them together.

When asked why users did not use the lesson guides in question, respondents provided the comments below.

Have not had the opportunity at this time to fully use them. Used part of one.
I just previewed them. I would try to implement in 2003-04 school year.
not in my state standards
I do not get the programming for this year's shows.
I look through them but use the programs primarily as exploratory/supplementary information for my home education curriculum. However, they've been very interesting and gave fodder for thought and some adaptable projects.
They were much too difficult for fourth graders.
Click on the wrong line and could not clear.
I received about half of these guides from my media specialist (not directly) and usually after the topic had already been covered - I plan on using them next year but would love to also have the videos to increase student interest and learning - was only able to use one guide but it was Great!
I started with the program late and only received the last two. I also had trouble viewing on-line. I plan to order the videos for the next school year because our cable does not carry the programming.
I will use them next year when I get all of the tapes.
not enough time to read survey
I used the lesson guides to determine the Sunshine State Standards. We, as the District Instructional Television Department, do not have a classroom. This evaluation is done to the best of our observation and some feedback from various teachers.
Until I have the tapes...I was able to watch most of the programs but not record them. Can I buy them

from someone?
I broadcast The Education channel from my department. I am not in the classroom.
Didn't have time to incorporate the material in my teaching this year, but I likely will use it next year or download it and give it to teachers in another grade level where they teach that subject. Example: "pulleys" needs to go to our 4th grade team.
I have limited time this year but I have passed the lessons on to a science teacher at our school.
My classes are new GED Prep groups and I needed to assess their abilities and class functioning. I hope to integrate these programs next semester.
I became aware of the program late in the year, then couldn't get the tapes.
School ended before I received information. I will start at the beginning of School in August.
Our school emphasis was on following the local pacing guide.
I did not have the guides.
I have not been able to obtain your videos or some of the lesson guides. However, your learning materials would be ideal for Australian students.
I haven't received the lesson guides.
I did not teach math or science this school year.
I'm not sure how to get them. How can I be informed?
Could not receive the program but used activities I found in the guides with my science curriculum.
I didn't use them in 2002-2003, but I am working to integrate them into 2003-2004 curriculum.
Used the programs as supplement to existing curriculum material.
did not view
Unfortunately, this past year, we were unable to get the videos for these lessons. I could not download them, and we did not have the funds to order them from NASA. Hopefully, this coming year the moneys will be available. However, I did receive the lesson plans and am answering your questions accordingly.
I did not have them.
Did not have access to them
I didn't do all segments offered this year, but I may use them next year.

When asked to give any additional comments regarding the lesson guides, respondents provided the comments below.

The lesson guides are an invaluable resource. They provide so many different activities it allows me the flexibility to pick different activities based on the time available.
GREAT!!!
Excellent
I prefer to receive them in printed format. Some of the background information was more technical than needed, but the activities and concepts were extremely valuable.
DVD not available on the computers yet.
not teaching staff
We would rather download from the Web.

I sometimes found the level above my students or the information not pertinent to what was being studied.
Easy to understand with interesting activities.
I studied the printed lesson guides beforehand and thought they were well laid out and would provide for a good class experience. If they were unavailable in print, that is understandable, but I would print them from CD or online to be able to transport them around my room while in use.
There were many errors in the activities as well as in the answer keys. I contacted your office regarding the epicenter location activity, and I found other errors in other activities.
We are home schooling Kindergarten. Some activities can be incorporated into our program. Magic school bus is used to supplement in early years teaching.
CD would enable the addition of other materials and exploratory learning situations as well.
The one guide (weather) I was able to use was eagerly received by my students - I plan on using the few others I have next year. I was impressed with the lessons.
I used parts of them even without the programs and was very impressed.
I did not get that far because the programs did not coincide with the timing of curriculum to be taught.
I would like to obtain the videos to go with the lesson guides. Please advise.
Since schools are transitioning, you should have CD/DVD.
We can't really answer this and speak for the teachers. I suspect the Web is probably the best source for them.
I like having them sent to me so I can reproduce the pages I need without having to go through yet another step.
Please send CDs so that a small primary school of 40 students located in the Woodside beach can benefit from your tremendous expertise.
VHS taping is more universal...I wouldn't do away with that format.
I would love to have them on CD.
That would be great!

When asked why users did not use the PBL activities in question, respondents provided the comments below.

I am using this program as part of my science enrichment resource. Due to time constraints, some of the activities were cut off, but I supplemented some on-line investigations with computer software I have already purchased.
I guess I don't remember even looking at these. Sorry.
No time in computer room
I don't know what PBL is.
No time in the computer lab
Did not get to yet, saved for after spring break.
No computer access for students.
did not get
I didn't receive all the programs.
Didn't have time in my curriculum. Too much to teach, too little time.

Time constraints
I used only the lessons pertaining to my grade level.
We were unable to receive the program.
Time restraints due to proficiency needs.
Currently I'm the computer lab teacher & distance learning coordinator, so I don't have follow-up time.
#7 was not there last week
The lessons that I have not and will probably not use are not covered in the essential knowledge required for the Virginia SOLs for third grade.
Without the guide, it wasn't something I felt comfortable doing.
not teaching staff
I am not a classroom teacher.
Time limitations
Too heavy for 3rd grade!
Doesn't apply to us. We just broadcast the programs to the schools.
Limited access for students
not available
Materials are passed onto the classroom teachers.
I didn't complete any lesson with my students.
I just viewed the program for technology recommendations for our school.
I do not directly instruct students. I am aware of program usage in the classroom but not of the specifics.
I didn't have time to check out the online activities.
signed up too late to participate
No particular reason
Not part of my curriculum, may be used by others
ran out of time
See above
We watched the shows and discussed; we did not go on line to enhance.
This was my first year and I need a little more time.
This was the first year that I used the programs and I am a new teacher. I will probably dig deeper into the material next year.
Again, because of my situation this year, I was unable to include extra things into the curriculum; also I was a little concerned about the age level I have been placed with—2nd graders.
See previous answer...will use starting this fall.
not enough computers
not enough time

When asked why users did not use the PBL activities in question, respondents provided the comments below.

didn't view the programs this year
couldn't get info off the online site
did not have tapes so we did not do online work
computer access/time
I did not receive PBLs.
Waiting for videos.
Did not feel the students needed it at the time.
I previewed them for use in 2003-04 school year.
I didn't find out about the program until I was well into the unit and didn't have time to explore all you all had to offer. I definitely will plan better next year.
lack of time
I like the idea, but had no way to incorporate it into the schedule this year.
Time constraints
I used the online activities for the programs of previous years.
Not enough access for 66 students.
no access in my classroom
I received them too late in the year and had already taught the content.
Just didn't have the time!
didn't fit into time frame w/ 3rd grade students
limited time in gifted center
The time and shortage of computers
I used PBL in several units of my own but do not have enough time to use for all.
Do not have program
haven't learned how to use PBL myself yet
It doesn't apply to us.
limited computer access for the students
I would use it if I were able to receive the programs on tape. I believe PBL is crucial to learning scientific thought processes.
Same answer as before. This year I was perpetually behind where I was supposed to be in the curriculum and was therefore having to dump activities, not add them. I'll do better next year!
Time limit
no time to use them
see above response
Same as above
I became aware of the program late in the year and couldn't get the tapes.
end of school year
We were concentrating on our local pacing guide this year.
Did not have a chance or time to work it in, but I am willing to try more of each lesson each year.
Unable to access via the Internet

I was not aware.
did not know it was there
Besides just learning the PBL method and practicing it in class, I also ventured into “Investigations” math program. I also had a student teacher shadowing me and many responsibilities that took up time. This year I simply could not add another thing and stay sane. I have the program guides that were passed on from a fellow teacher and may utilize this great resource in the near future.
What’s the PBL activity???
I only taught language arts this year.
My classroom computers were out being repaired for most of the year.
Not sure to what you are referring, here.

When asked why users did not use the PBL activities in question, respondents provided the comments below.

time constraints and limited computer resources in classroom
We used the activities in our county curriculum guide, but used the tapes and internet resources to enrich the content of the lesson.
Please see last explanation.
just starting to use Sci Files in home school
Time
Not enough time
did not get them in time
Only used programs as background

When asked to provide any additional comments concerning the PBL activities, respondents provided the comments below.

fun
Problem Based Learning activities help students to delve deeper–more questions and problem-solving activities related to Science
But with adaptations to suit the particular objectives and student learning stage

When asked to provide any additional comments concerning the SCI Files web site, respondents provided the comments below.

I appreciate all the assistance provided to me for my students by the NASA SCI Files. My students have learned by leaps and bounds about Science, Technology, and Mathematics.
I only use the web site to download curriculum lessons that I do not receive in hard copy. My computer link is too slow to spend time roaming the Web or web sites unless necessary.
It is great! I am not a teacher. This survey is tooo loooong.
can't wait to use them

I had a difficult time trying to find where to download the video.
I've not seen any of the videos yet and will need to get them from NASA as I don't have access to a way to view them otherwise. I'm anxious to see them.
Since we home school, any added help is wonderful. I have used many NASA sites and materials and I am really grateful for all your help! Since my funds are limited, any materials at low cost or free is really nice, too!
I feel that if my computer equipment were better, some of the questions marked 4 would be 5.
I've never seem a NASA-related site that I didn't like or from which I couldn't find something to use, either for my own knowledge enrichment or something to use with my kids.
Thank you for providing this service.
From what I could access, the programs are excellent.
I hope it can continue.
I would love to have other tapes about various topics when they become available.
n/a
I'm pleased to be able to bring this type of Real Life World problems to my gifted students.
super!
I did not find out about SciFiles until late in the school year. I would love to have the programs on video tape with the guides. Is there a way to accomplish this easily? I will be teaching 5th grade next year with the same group of students and would like very much to incorporate these programs into my curriculum where possible.

When asked to provide any additional comments concerning the SCI Files web site, respondents provided the comments below.

great site!
Did not access web site. Lack of technology available

When asked to provide any alternate means by which students used classroom computers, respondents provided the comments below.

Other, in a computer lab – in pairs
Other, either in pairs or small group
Other, Depends on the activity
Other
Other, Whoever gets a chance to use them. One at a time.
Other, or 2 or 3, depends
Other, guided
we use the lab
Other, computer use is in our school lab
Other, computer lab-one for all
Other

Other, taking turns
Other, lab setting used in a variety of ways (indiv, partners, groups, etc.)
Other, only just obtained computer access in classroom but students have used as pairs and as groups of three
Other, computer lab
Other, as a whole group demonstration
Other, all of the above
Other, I use various scenarios; I also have access to iBook mobile lab.
Other, and in pairs or expert groups
Other, Also used in pairs, threes and fours, depending on the project.

When asked to provide their ethnicity, the below responses were given to the prompt of "other."

Other
Other
Other
Other
Other
Other
Other
Other

Appendix D

Longitudinal Data

Instructional Programming and Technology in the Classroom

Instructional technology enables teachers to teach more effectively.

	00-01	01-02	02-03
Mean	4.42	4.61	4.31
Median	5.00	5.00	5.00
Standard deviation	0.09	0.69	0.94
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	154.00	100.00	203.00
No opinion	1.00	0.00	3.00

Longitudinal mean
4.45

Instructional technology enables teachers to accommodate different learning styles.

	00-01	01-02	02-03
Mean	4.53	4.63	4.32
Median	5.00	5.00	5.00
Standard deviation	0.81	0.58	0.95
Minimum	1.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	152.00	99.00	204.00
No opinion	3.00	1.00	2.00

Longitudinal mean
4.49

Instructional technology enables teachers to be more creative.

	00-01	01-02	02-03
Mean	4.50	4.60	4.37
Median	5.00	5.00	5.00
Standard deviation	0.81	0.64	0.94
Minimum	1.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	154.00	99.00	203.00
No opinion	1.00	1.00	2.00

Longitudinal mean
4.49

Instructional technology increases student learning and comprehension.

	00-01	01-02	02-03
Mean	4.30	4.52	4.20
Median	4.00	5.00	4.00
Standard deviation	0.80	0.71	0.97
Minimum	1.00	3.00	3.00
Maximum	5.00	5.00	5.00
Count	154.00	98.00	199.00
No opinion	1.00	0.00	3.00

Longitudinal mean
4.34

Instructional technology increases student willingness to discuss content/exchange ideas.

	00-01	01-02	02-03
Mean	4.20	4.36	4.19
Median	4.00	5.00	4.00
Standard deviation	0.86	0.75	0.92
Minimum	1.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	151.00	99.00	201.00
No opinion	3.00	1.00	3.00

Longitudinal mean
4.25

Instructional technology increases student motivation and enthusiasm for learning.

	00-01	01-02	02-03
Mean	4.51	4.56	4.41
Median	5.00	5.00	5.00
Standard deviation	0.65	0.68	0.93
Minimum	1.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	154.00	97.00	200.00
No opinion	1.00	3.00	3.00

Longitudinal mean
4.49

Instructional technology is effective with virtually all types of students.

	00-01	01-02	02-03
Mean	3.97	4.10	3.91
Median	4.00	4.00	4.00
Standard deviation	1.06	0.97	1.03
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	151.00	99.00	1.97
No opinion	4.00	1.00	6.00

Longitudinal mean
3.99

Increasingly, schools have greater access to instructional programs.

	00-01	01-02	02-03
Mean	4.01	4.14	3.91
Median	4.00	4.00	4.00
Standard deviation	1.02	0.96	1.04
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	152.00	98.00	196.00
No opinion	0.00	2.00	9.00

Longitudinal mean
4.02

Most of these programs are of good quality.

	00-01	01-02	02-03
Mean	3.68	3.92	3.78
Median	4.00	4.00	4.00
Standard deviation	0.99	0.98	1.02
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	149.00	99.00	196.00
No opinion	3.00	1.00	9.00

Longitudinal mean
3.79

Most of these programs are inappropriate (i.e., too advanced or too basic for my students).

	00-01	01-02	02-03
Mean	3.36	3.59	3.67
Median	3.00	4.00	4.00
Standard deviation	0.90	1.25	0.99
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	148.00	93.00	188.00
No opinion	4.00	6.00	14.00

Longitudinal mean
3.54

Most of these programs are easily broken into “teachable” units.

	00-01	01-02	02-03
Mean	3.26	3.41	3.78
Median	3.00	4.00	4.00
Standard deviation	1.19	1.14	1.02
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	147.00	89.00	188.00
No opinion	5.00	9.00	12.00

Longitudinal mean
3.48

Administrators support and encourage teachers to use instructional technology in the classroom.

	00-01	01-02	02-03
Mean	3.96	4.04	3.72
Median	4.00	4.00	4.00
Standard deviation	1.21	1.00	1.17
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	142.00	92.00	191.00
No opinion	7.00	6.00	13.00

Longitudinal mean
3.91

Classrooms are growing increasingly rich in instructional technology.

	00-01	01-02	02-03
Mean	3.72	3.94	3.68
Median	4.00	4.00	4.00
Standard deviation	0.99	1.05	1.06
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	149.00	95.00	202.00
No opinion	2.00	3.00	3.00

Longitudinal mean
3.78

Teachers are generally positive about introducing/using instructional technology in the classroom.

	00-01	01-02	02-03
Mean	3.47	3.39	3.45
Median	3.00	3.00	3.00
Standard deviation	1.07	1.06	1.01
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	146.00	97.00	198.00
No opinion	3.00	2.00	4.00

Longitudinal mean
3.44

Which of the following factors are barriers to integrating technology into your instructional program? (Check all that apply.)

	00-01	01-02	02-03	Longitudinal averages
# Respondents	152.00	100.00	192.00	
Not enough or limited access…	116.00	64.00	120.00	
	76.32%	64.00%	62.50%	67.61%
Not enough computer software...	86.00	49.00	83.00	
	56.58%	49.00%	43.23%	49.60%
Purchased software has not…	24.00	10.00	12.00	
	15.79%	10.00%	6.25%	10.68%
Lack of time in school…	103.00	59.00	120.00	
	67.76%	59.00%	62.50%	63.09%
Lack of technical support…	64.00	36.00	81.00	
	42.11%	36.00%	42.19%	40.10%
Lack of teacher training…	73.00	44.00	94.00	
	48.03%	44.00%	48.96%	46.99%
Lack of knowledge concerning…	54.00	43.00	73.00	
	35.53%	43.00%	38.02%	38.85%

Do you use instructional programming in your classroom?

	00-01	01-02	02-03
	No data		
Yes		77.00	161.00
No		20.00	36.00
n =		97.00	197.00

Compared to other instructional programming, the quality of the NASA SCIence Files™ is…

	00-01	01-02	02-03
	No data		
better than average		58.00	140.00
about average		17.00	18.00
worse than average		0.00	0.00
I'm unable to judge		6.00	13.00

Compared to the curriculum/lesson guides in other instructional programming, the quality of the NASA SCIence Files™ curriculum/lesson guide is…

	00-01	01-02	02-03
	No data		
better than average		57.00	133.00
about average		18.00	25.00
worse than average		0.00	0.00
I'm unable to judge		6.00	10.00

Compared to the video in other instructional programming, the quality of the video in the NASA SCIence Files™ is…

	00-01	01-02	02-03
	No data		
better than average		55.00	105.00
about average		14.00	37.00
worse than average		0.00	0.00
I'm unable to judge		12.00	27.00

Compared to the web-based activities in other instructional programming, the quality of the web-based activities in NASA SCIence Files™ is…

	00-01	01-02	02-03
	No data		
better than average		53.00	117.00
about average		15.00	28.00
worse than average		1.00	0.00
I'm unable to judge		12.00	24.00

Television/Video Programs

Did you use the following programs?

	00-01	01-02	02-03
Program 1			
yes	38.00	21.00	71.00
no	31.00	19.00	26.00
no, but I may in future	64.00	41.00	99.00
Program 2			
yes	55.00	30.00	56.00
no	24.00	18.00	31.00
no, but I may in future	56.00	33.00	104.00
Program 3			
yes	53.00	26.00	54.00
no	28.00	13.00	27.00
no, but I may in future	55.00	43.00	110.00
Program 4			
yes	49.00	42.00	53.00
no	28.00	8.00	32.00
no, but I may in future	60.00	36.00	104.00
Program 5	No data		
yes		34.00	63.00
no		13.00	34.00
no, but I may in future		42.00	85.00
Program 6	No data		
yes		39.00	66.00
no		12.00	18.00
no, but I may in future		34.00	105.00
Program 7	No data		
yes		40.00	39.00
no		9.00	27.00
no, but I may in future		39.00	124.00
Program 8	No data	No data	
yes			39.00
no			27.00
no, but I may in future			124.00
Program 9	No data	No data	
yes			32.00
no			27.00
no, but I may in future			133.00

If you selected “yes” (to having used the video programs) please indicate how these programs were used.

	00-01	01-02	02-03
Program 1			
a. to introduce a curriculum topic, objective, or skill	21.00	26.00	38.00
b. to reinforce a curriculum topic, objective, or skill	14.00	23.00	38.00
c. as a special interest topic	13.00	19.00	20.00
d. other	No data	No data	No data
e. break from routine	No data	7.00	13.00
Program 2			
a. to introduce a curriculum topic, objective, or skill	18.00	12.00	21.00
b. to reinforce a curriculum topic, objective, or skill	37.00	24.00	29.00
c. as a special interest topic	17.00	10.00	15.00
d. other	No data	No data	No data
e. break from routine	No data	10.00	10.00
Program 3			
a. to introduce a curriculum topic, objective, or skill	19.00	11.00	22.00
b. to reinforce a curriculum topic, objective, or skill	38.00	20.00	29.00
c. as a special interest topic	16.00	14.00	16.00
d. other	No data	No data	No data
e. break from routine	No data	9.00	9.00
Program 4			
a. to introduce a curriculum topic, objective, or skill	16.00	12.00	22.00
b. to reinforce a curriculum topic, objective, or skill	19.00	22.00	35.00
c. as a special interest topic	21.00	10.00	23.00
d. other	No data	No data	No data
e. break from routine	No data	11.00	7.00
Program 5	No data	No data	
a. to introduce a curriculum topic, objective, or skill			20.00
b. to reinforce a curriculum topic, objective, or skill			33.00
c. as a special interest topic			14.00
d. other			No data
e. break from routine			9.00
Program 6	No data	No data	
a. to introduce a curriculum topic, objective, or skill			24.00
b. to reinforce a curriculum topic, objective, or skill			38.00
c. as a special interest topic			20.00
d. other			No data
e. break from routine			11.00
Program 7	No data	No data	
a. to introduce a curriculum topic, objective, or skill			13.00
b. to reinforce a curriculum topic, objective, or skill			22.00
c. as a special interest topic			9.00
d. other			No data
e. break from routine			8.00
Program 8	No data	No data	
a. to introduce a curriculum topic, objective, or skill			22.00
b. to reinforce a curriculum topic, objective, or skill			39.00
c. as a special interest topic			18.00
d. other			No data
e. break from routine			8.00
Program 9	No data	No data	
a. to introduce a curriculum topic, objective, or skill			14.00
b. to reinforce a curriculum topic, objective, or skill			19.00
c. as a special interest topic			10.00
d. other			No data
e. break from routine			7.00

If you selected “yes” for having used the video programs, please indicate how these programs were viewed.

	00-01	01-02	02-03
Program 1			
a. live	4.00	2.00	8.00
b. taped	30.00	38.00	59.00
c. both	1.00	6.00	8.00
d. not viewed	14.00	9.00	16.00
Program 2			
a. live	5.00	3.00	3.00
b. taped	43.00	27.00	43.00
c. both	1.00	5.00	4.00
d. not viewed	10.00	8.00	23.00
Program 3			
a. live	6.00	4.00	4.00
b. taped	36.00	24.00	36.00
c. both	3.00	6.00	4.00
d. not viewed	18.00	7.00	25.00
Program 4			
a. live	5.00	4.00	2.00
b. taped	37.00	26.00	49.00
c. both	1.00	5.00	3.00
d. not viewed	16.00	9.00	19.00
Program 5	No data	No data	
a. live			4.00
b. taped			51.00
c. both			3.00
d. not viewed			18.00
Program 6	No data	No data	
a. live			4.00
b. taped			49.00
c. both			4.00
d. not viewed			18.00
Program 7	No data	No data	
a. live			2.00
b. taped			27.00
c. both			7.00
d. not viewed			24.00
Program 8	No data	No data	
a. live			6.00
b. taped			54.00
c. both			4.00
d. not viewed			21.00
Program 9	No data	No data	
a. live			4.00
b. taped			25.00
c. both			6.00
d. not viewed			24.00

How did you receive the program?

	00-01	01-02	02-03
PBS	24.00	22.00	38.00
Downlinked it	1.00	10.00	31.00
Media Specialist taped it	16.00	24.00	41.00
I, or someone else taped it	27.00	14.00	46.00
NASA sent me the tapes	33.00	14.00	28.00

Did you experience difficulty obtaining any of the programs in the (2000-2001) NASA SCI Files™ series?

	00-01	01-02	02-03	Longitudinal mean
% who had difficulty	45.30%	34.18%	40.98%	
Yes	53.00	27.00	75.00	
No	64.00	52.00	108.00	40.15%
n =	117.00	79.00	183.00	

If you selected "yes" for having viewed the video programs, please indicate the grade level(s) that viewed the programs.

	00-01	01-02	02-03
Grades			
Kindergarten	No data	2.00	3.00
1st	No data	3.00	6.00
2nd	No data	2.00	5.00
3rd	11.00	8.00	41.00
4th	15.00	17.00	51.00
5th	19.00	21.00	60.00
6th	11.00	15.00	29.00
7th	12.00	9.00	16.00
8th	13.00	10.00	25.00
9th	5.00	4.00	6.00
10th	3.00	No data	3.00
11th	2.00	No data	4.00
12th	2.00	No data	3.00
13th	No data	No data	1.00
14th	No data	No data	1.00
15th	No data	No data	1.00
16th	No data	No data	2.00

The programs were well organized.

	00-01	01-02	02-03
Mean	4.65	4.54	4.36
Median	5.00	5.00	5.00
Standard deviation	0.58	0.60	0.81
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	100.00	72.00	162.00
No opinion	11.00	6.00	30.00

Longitudinal mean
4.52

The programs were of good technical quality.

	00-01	01-02	02-03
Mean	4.68	4.65	4.44
Median	5.00	5.00	5.00
Standard deviation	0.53	0.51	0.85
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	101.00	71.00	159.00
No opinion	10.00	6.00	33.00

Longitudinal mean
4.59

The programs made “learning science” interesting.

	00-01	01-02	02-03
Mean	4.69	4.61	4.50
Median	5.00	5.00	5.00
Standard deviation	0.53	0.55	0.76
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	99.00	69.00	154.00
No opinion	12.00	9.00	32.00

Longitudinal mean
4.60

The programs increased your students' knowledge of science.

	00-01	01-02	02-03
Mean	4.53	4.59	4.38
Median	5.00	5.00	5.00
Standard deviation	0.65	0.55	0.84
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	92.00	68.00	152.00
No opinion	18.00	9.00	39.00

Longitudinal mean
4.50

The programs presented a "problem-based learning" environment.

	00-01	01-02	02-03
Mean	4.45	4.56	4.37
Median	5.00	5.00	5.00
Standard deviation	0.70	0.56	0.88
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	101.00	68.00	158.00
No opinion	10.00	9.00	30.00

Longitudinal mean
4.46

The programs stressed the importance of information literacy skills.

	00-01	01-02	02-03
Mean	4.39	4.46	4.25
Median	4.00	5.00	4.00
Standard deviation	0.67	0.63	0.89
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	97.00	68.00	151.00
No opinion	15.00	10.00	38.00

Longitudinal mean
4.37

The programs increased student willingness to discuss/exchange ideas.

	00-01	01-02	02-03
Mean	4.22	4.30	4.17
Median	4.00	4.00	4.00
Standard deviation	0.75	0.72	0.83
Minimum	2.00	2.00	1.00
Maximum	5.00	5.00	5.00
Count	90.00	67.00	149.00
No opinion	19.00	10.00	37.00

Longitudinal mean
4.23

The programs increased student enthusiasm for learning.

	00-01	01-02	02-03
Mean	4.35	4.35	4.38
Median	4.00	4.00	5.00
Standard deviation	0.71	0.64	0.67
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	91.00	68.00	152.00
No opinion	20.00	10.00	37.00

Longitudinal mean
4.36

The programs were effective with virtually all types of students.

	00-01	01-02	02-03
Mean	3.91	4.06	4.04
Median	4.00	4.00	4.00
Standard deviation	1.01	0.70	0.93
Minimum	2.00	2.00	1.00
Maximum	5.00	5.00	5.00
Count	89.00	65.00	146.00
No opinion	20.00	12.00	41.00

Longitudinal mean
4.00

The programs were a valuable instructional aid.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.44	4.57	4.39	
Median	5.00	5.00	5.00	
Standard deviation	0.70	0.58	0.82	4.47
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	95.00	68.00	157.00	
No opinion	14.00	9.00	31.00	

The programs were developmentally appropriate for the grade level.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.13	4.50	4.23	
Median	4.00	5.00	4.00	
Standard deviation	0.90	0.65	0.89	4.29
Minimum	2.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	96.00	70.00	153.00	
No opinion	13.00	8.00	33.00	

The programs were easily incorporated into the curriculum.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.26	4.20	4.26	
Median	4.00	4.00	4.00	
Standard deviation	0.79	0.79	0.89	4.24
Minimum	3.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	97.00	69.00	151.00	
No opinion	13.00	8.00	37.00	

The programs enhanced the integration of mathematics, science, and technology in the classroom.

	00-01	01-02	02-03
Mean	4.50	4.69	4.43
Median	5.00	5.00	5.00
Standard deviation	0.72	0.50	0.85
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	98.00	68.00	156.00
No opinion	12.00	8.00	34.00

Longitudinal mean
4.54

The programs raised student awareness of careers that require mathematics, science, and technology.

	00-01	01-02	02-03
Mean	4.47	4.44	4.33
Median	5.00	5.00	5.00
Standard deviation	0.73	0.66	0.85
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	99.00	68.00	152.00
No opinion	11.00	9.00	36.00

Longitudinal mean
4.41

The programs demonstrated the application of mathematics, science, and technology on the job.

	00-01	01-02	02-03
Mean	4.60	4.52	4.38
Median	5.00	5.00	5.00
Standard deviation	0.66	0.63	0.88
Minimum	2.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	96.00	69.00	159.00
No opinion	14.00	7.00	29.00

Longitudinal mean
4.50

The programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills.

	00-01	01-02	02-03
Mean	4.55	4.54	4.47
Median	5.00	5.00	5.00
Standard deviation	0.67	0.58	0.82
Minimum	2.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	99.00	69.00	159.00
No opinion	12.00	8.00	29.00

Longitudinal mean
4.52

The programs stressed the importance of information technology skills.

	00-01	01-02	02-03
Mean	4.36	4.50	4.34
Median	4.00	5.00	4.50
Standard deviation	0.70	0.66	0.82
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	96.00	68.00	158.00
No opinion	14.00	7.00	32.00

Longitudinal mean
4.40

The programs presented women and minorities performing challenging engineering and scientific tasks.

	00-01	01-02	02-03
Mean	4.34	4.45	4.26
Median	5.00	5.00	4.00
Standard deviation	0.76	0.71	0.87
Minimum	3.00	2.00	1.00
Maximum	5.00	5.00	5.00
Count	93.00	65.00	145.00
No opinion	18.00	10.00	44.00

Longitudinal mean
4.35

The programs were a positive link between the classroom activity and the web-based activity.

	00-01	01-02	02-03
Mean	4.45	4.47	4.26
Median	5.00	5.00	4.00
Standard deviation	0.73	0.72	0.91
Minimum	3.00	2.00	1.00
Maximum	5.00	5.00	5.00
Count	87.00	62.00	145.00
No opinion	22.00	13.00	42.00

Longitudinal mean
4.39

The length of the program (60 minutes) is…

	00-01	01-02	02-03
Too long	35.00	1.00	1.00
Too short	3.00	36.00	38.00
Just right	65.00	35.00	134.00

Educator Guides

Did you use the educator guides for the following programs?

	00-01	01-02	02-03
Program 1			
yes	43.00	22.00	64.00
no	12.00	14.00	23.00
no, but I may in future	60.00	28.00	84.00
Program 2			
yes	53.00	25.00	45.00
no	10.00	14.00	29.00
no, but I may in future	45.00	24.00	81.00
Program 3			
yes	64.00	24.00	53.00
no	11.00	11.00	20.00
no, but I may in future	45.00	31.00	85.00
Program 4			
yes	53.00	38.00	55.00
no	9.00	9.00	26.00
no, but I may in future	58.00	24.00	84.00
Program 5	No data		
yes		31.00	60.00
no		9.00	28.00
no, but I may in future		31.00	66.00
Program 6	No data		
yes		34.00	52.00
no		6.00	24.00
no, but I may in future		28.00	85.00
Program 7	No data		
yes		35.00	34.00
no		6.00	23.00
no, but I may in future		30.00	97.00
Program 8	No data	No data	
yes			66.00
no			19.00
no, but I may in future			83.00
Program 9	No data	No data	
yes			32.00
no			22.00
no, but I may in future			101.00

The educator guides correlated with the video.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.59	4.57	4.36	
Median	5.00	5.00	5.00	
Standard deviation	0.67	0.59	0.88	4.51
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	78.00	60.00	123.00	
No opinion	27.00	11.00	38.00	

The activities and worksheets helped your students learn the “stated” learning objectives.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.55	4.55	4.38	
Median	5.00	5.00	5.00	
Standard deviation	0.65	0.62	0.85	4.49
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	103.00	62.00	133.00	
No opinion	8.00	8.00	24.00	

The directions/instructions in the educator guides were easily understood.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.50	4.48	4.34	
Median	5.00	5.00	5.00	
Standard deviation	0.75	0.62	0.88	4.44
Minimum	2.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	106.00	64.00	137.00	
No opinion	6.00	6.00	20.00	

The layout of the educator guides presented the information clearly.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.54	4.56	4.38	4.49
Median	5.00	5.00	5.00	
Standard deviation	0.68	0.64	0.86	
Minimum	3.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	107.00	63.00	140.00	
No opinion	5.00	7.00	19.00	

The educator guides were a valuable instructional aid.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.57	4.63	4.48	4.56
Median	5.00	5.00	5.00	
Standard deviation	0.66	0.52	0.80	
Minimum	2.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	106.00	63.00	134.00	
No opinion	5.00	7.00	22.00	

The print and electronic resources in the educator guides were a valuable instructional aid.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.50	4.46	4.45	4.47
Median	5.00	5.00	5.00	
Standard deviation	0.66	0.72	0.78	
Minimum	3.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	98.00	61.00	129.00	
No opinion	17.00	10.00	29.00	

The educator guides were easy to download from the Internet.

	00-01	01-02	02-03
Mean	4.51	4.21	4.32
Median	5.00	5.00	5.00
Standard deviation	0.70	0.95	1.03
Minimum	3.00	2.00	1.00
Maximum	5.00	5.00	5.00
Count	51.00	42.00	100.00
No opinion	63.00	29.00	57.00

Longitudinal mean
4.35

Did you experience difficulty obtaining any of the guides in the NASA SCI Files™ series?

	00-01	01-02	02-03
Yes	11.00	12.00	19.00
No	97.00	58.00	126.00

If the educator guides were only available in electronic format, could you and would you use them?

	00-01	01-02	02-03
Could you use them:	No data		
on CD-ROM		61.00	61.00
on DVD		19.00	19.00
Would you use them:	No data		
on CD-ROM		59.00	59.00
on DVD		22.00	22.00

Problem-Based Learning Activities

Did you use the PBL activity for the following programs?

	00-01	01-02	02-03
Program 1			
yes	25.00	9.00	27.00
no	26.00	17.00	41.00
no, but I may in future	72.00	37.00	100.00
Program 2			
yes	34.00	10.00	19.00
no	26.00	21.00	40.00
no, but I may in future	60.00	32.00	100.00
Program 3			
yes	30.00	11.00	20.00
no	34.00	16.00	38.00
no, but I may in future	55.00	39.00	103.00
Program 4			
yes	31.00	17.00	22.00
no	31.00	15.00	38.00
no, but I may in future	62.00	37.00	102.00
Program 5	No data		
yes		13.00	26.00
no		18.00	42.00
no, but I may in future		35.00	91.00
Program 6	No data		
yes		14.00	24.00
no		16.00	37.00
no, but I may in future		39.00	107.00
Program 7	No data		
yes		18.00	13.00
no		15.00	0.00
no, but I may in future		35.00	145.00
Program 8	No data	No data	
yes			28.00
no			35.00
no, but I may in future			104.00
Program 9	No data	No data	
yes			14.00
no			34.00
no, but I may in future			111.00

The content of the PBL activities was easily integrated into the curriculum.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.22	4.27	4.26	
Median	4.00	4.00	4.00	
Standard deviation	0.73	0.77	0.89	4.25
Minimum	3.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	58.00	37.00	64.00	
No opinion	21.00	11.00	63.00	

The content of the PBL activities enhanced the integration of mathematics, science, and technology.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.38	4.44	4.29	
Median	4.00	5.00	5.00	
Standard deviation	0.67	0.61	0.82	4.37
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	60.00	34.00	68.00	
No opinion	11.00	12.00	56.00	

The PBL activities raised student awareness of careers that require mathematical, scientific, and technological knowledge.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.34	4.37	4.29	
Median	4.00	5.00	4.50	
Standard deviation	0.66	0.73	0.86	4.33
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	59.00	35.00	64.00	
No opinion	12.00	10.00	59.00	

If you selected “yes” for having used the PBL activities, please indicate the grade level(s) that used the PBL activities.

Grades	00-01	01-02	02-03
Kindergarten	0.00	0.00	4.00
1st	2.00	0.00	5.00
2nd	3.00	0.00	5.00
3rd	7.00	8.00	15.00
4th	10.00	10.00	27.00
5th	13.00	14.00	30.00
6th	9.00	9.00	11.00
7th	8.00	3.00	12.00
8th	9.00	6.00	13.00
9th	8.00	3.00	3.00
10th	No data	No data	2.00
11th	No data	No data	2.00
12th	No data	No data	2.00
13th	No data	No data	1.00
14th	No data	No data	1.00
15th	No data	No data	1.00
16th	No data	No data	1.00

Students were able to complete the PBL activities in a reasonable amount of time.

	00-01	01-02	02-03
Mean	4.04	4.03	4.10
Median	4.00	4.00	4.00
Standard deviation	0.85	1.00	0.90
Minimum	2.00	1.00	2.00
Maximum	5.00	5.00	5.00
Count	56.00	32.00	59.00
No opinion	12.00	13.00	64.00

Longitudinal mean
4.06

The PBL activities accommodated various learning styles.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.22	4.16	4.27	4.22
Median	4.00	4.00	4.00	
Standard deviation	0.76	0.95	0.85	
Minimum	3.00	1.00	1.00	
Maximum	5.00	5.00	5.00	
Count	60.00	32.00	62.00	
No opinion	12.00	13.00	63.00	

The content for the PBL activities was appropriate for my students.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.21	4.06	4.22	4.16
Median	4.00	4.00	4.00	
Standard deviation	0.70	1.06	0.79	
Minimum	3.00	1.00	1.00	
Maximum	5.00	5.00	5.00	
Count	62.00	33.00	62.00	
No opinion	10.00	12.00	60.00	

The graphics for the PBL activities were appropriate for my students.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.32	4.24	4.26	4.27
Median	4.00	4.00	4.00	
Standard deviation	0.70	0.82	0.88	
Minimum	3.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	62.00	34.00	60.00	
No opinion	10.00	11.00	60.00	

The PBL activities enhanced the integration of mathematics, science, and technology.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.35	4.47	4.44	
Median	4.00	5.00	5.00	
Standard deviation	0.70	0.66	0.77	4.42
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	62.00	34.00	65.00	
No opinion	10.00	12.00	59.00	

The PBL activities had a good balance of text and graphics.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.38	4.41	4.40	
Median	4.00	5.00	5.00	
Standard deviation	0.61	0.82	0.82	4.40
Minimum	3.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	61.00	34.00	66.00	
No opinion	11.00	11.00	59.00	

The PBL activities allowed my students to work at their own pace.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.23	4.30	4.31	
Median	4.00	4.00	5.00	
Standard deviation	0.78	4.85	0.88	4.28
Minimum	3.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	57.00	33.00	61.00	
No opinion	13.00	13.00	59.00	

The PBL activities will likely be revisited/reused.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.38	4.41	4.51	
Median	5.00	5.00	5.00	
Standard deviation	0.72	0.76	0.75	4.43
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	60.00	32.00	70.00	
No opinion	12.00	13.00	51.00	

NASA SCIence Files™ Web Site

The web site is visually appealing.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.67	4.52	4.36	
Median	5.00	5.00	5.00	
Standard deviation	0.54	0.60	0.87	4.52
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	88.00	73.00	166.00	
No opinion	25.00	10.00	21.00	

There is a good balance between text and graphics on the web site.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.56	4.39	4.31	
Median	5.00	4.00	4.00	
Standard deviation	0.61	0.68	0.87	4.42
Minimum	3.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	84.00	72.00	162.00	
No opinion	23.00	11.00	23.00	

The web site is easily navigated.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.49	4.34	4.20	
Median	5.00	4.00	4.00	
Standard deviation	0.68	75.00	0.94	4.34
Minimum	3.00	1.00	1.00	
Maximum	5.00	5.00	5.00	
Count	87.00	71.00	169.00	
No opinion	21.00	10.00	18.00	

When viewed on my monitor, the web site is clearly legible.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.60	4.55	4.35	
Median	5.00	5.00	5.00	
Standard deviation	0.63	0.58	0.83	4.50
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	88.00	73.00	164.00	
No opinion	20.00	10.00	21.00	

The web site is designed so that printouts of individual pages are legible.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.53	4.49	4.40	
Median	5.00	5.00	5.00	
Standard deviation	0.68	0.59	0.85	4.47
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	78.00	68.00	154.00	
No opinion	28.00	16.00	32.00	

Pages within the web site download quickly.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.18	4.11	4.03	
Median	4.00	4.00	4.00	
Standard deviation	0.87	1.04	1.04	4.11
Minimum	2.00	1.00	1.00	
Maximum	5.00	5.00	5.00	
Count	76.00	64.00	156.00	
No opinion	30.00	19.00	31.00	

The page lengths are appropriate.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.35	4.42	4.27	
Median	5.00	5.00	4.00	
Standard deviation	0.73	0.75	0.89	4.35
Minimum	3.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	79.00	66.00	152.00	
No opinion	28.00	16.00	35.00	

The links to other sites/pages are current.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.47	4.60	4.24	
Median	5.00	5.00	4.00	
Standard deviation	0.72	0.59	0.87	4.44
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	79.00	62.00	141.00	
No opinion	28.00	21.00	42.00	

The external links provide opportunities for further exploration.

	00-01	01-02	02-03	Longitudinal mean
	No data			
Mean		4.61	4.28	
Median		5.00	4.00	
Standard deviation		0.56	0.87	4.45
Minimum		3.00	1.00	
Maximum		5.00	5.00	
Count		61.00	154.00	
No opinion		22.00	39.00	

The web site supports a PBL environment.

	00-01	01-02	02-03	Longitudinal mean
	No data			
Mean		4.40	4.31	
Median		5.00	5.00	
Standard deviation		0.71	0.83	4.36
Minimum		2.00	1.00	
Maximum		5.00	5.00	
Count		55.00	111.00	
No opinion		27.00	68.00	

The web site complements the broadcast/video.

	00-01	01-02	02-03	Longitudinal mean
Mean		4.52	4.29	
Median		5.00	4.00	
Standard deviation		0.54	0.85	4.41
Minimum		3.00	1.00	
Maximum		5.00	5.00	
Count		58.00	139.00	
No opinion		22.00	48.00	

Overall Assessment

The goals and objectives of the series were met.

	00-01	01-02	02-03
Mean	4.56	4.53	4.36
Median	5.00	5.00	5.00
Standard deviation	0.63	0.60	0.84
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	111.00	74.00	165.00
No opinion	12.00	9.00	23.00

Longitudinal mean
4.48

The program content was developmentally appropriate for the grade level.

	00-01	01-02	02-03
Mean	4.39	4.34	4.23
Median	5.00	4.50	4.00
Standard deviation	0.76	0.79	0.89
Minimum	2.00	2.00	1.00
Maximum	5.00	5.00	5.00
Count	114.00	76.00	160.00
No opinion	9.00	8.00	27.00

Longitudinal mean
4.32

The program content was aligned with the national mathematics, science, and technology standards.

	00-01	01-02	02-03
Mean	4.64	4.71	4.47
Median	5.00	5.00	5.00
Standard deviation	0.52	0.51	0.78
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	112.00	73.00	162.00
No opinion	11.00	10.00	24.00

Longitudinal mean
4.61

The program content was easily integrated into the curriculum.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.40	4.40	4.31	4.37
Median	5.00	5.00	4.00	
Standard deviation	0.71	0.79	0.78	
Minimum	3.00	2.00	1.00	
Maximum	5.00	5.00	5.00	
Count	114.00	75.00	160.00	
No opinion	9.00	9.00	25.00	

The program content enhanced the teaching of mathematics, science, and technology.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.61	4.54	4.44	4.53
Median	5.00	5.00	5.00	
Standard deviation	0.54	0.66	0.79	
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	113.00	76.00	166.00	
No opinion	9.00	8.00	20.00	

The programs raised student awareness about careers that require mathematics, science, and technology.

	00-01	01-02	02-03	Longitudinal mean
Mean	4.59	4.53	4.34	4.49
Median	5.00	5.00	5.00	
Standard deviation	0.58	0.64	0.90	
Minimum	3.00	3.00	1.00	
Maximum	5.00	5.00	5.00	
Count	108.00	77.00	161.00	
No opinion	14.00	8.00	27.00	

The programs presented the application of mathematics, science, and technology on the job.

	00-01	01-02	02-03
Mean	4.55	4.53	4.36
Median	5.00	5.00	5.00
Standard deviation	0.64	0.64	0.84
Minimum	3.00	2.00	1.00
Maximum	5.00	5.00	5.00
Count	110.00	77.00	165.00
No opinion	11.00	7.00	22.00

Longitudinal mean
4.48

The programs presented workplace mathematics, science, and technology as a collaborative process.

	00-01	01-02	02-03
Mean	4.60	4.55	4.35
Median	5.00	5.00	5.00
Standard deviation	0.58	0.62	0.86
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	110.00	76.00	165.00
No opinion	11.00	7.00	23.00

Longitudinal mean
4.50

The programs presented mathematics, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills.

	00-01	01-02	02-03
Mean	4.63	4.61	4.41
Median	5.00	5.00	5.00
Standard deviation	0.57	0.57	0.85
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	111.00	77.00	166.00
No opinion	8.00	7.00	20.00

Longitudinal mean
4.55

The programs presented women and minorities performing challenging engineering and science tasks.

	00-01	01-02	02-03
Mean	4.53	4.57	4.31
Median	5.00	5.00	5.00
Standard deviation	0.57	0.58	0.86
Minimum	3.00	3.00	1.00
Maximum	5.00	5.00	5.00
Count	104.00	70.00	154.00
No opinion	15.00	13.00	32.00

Longitudinal mean
4.47

Have you recommended the NASA SCIence Files™ to a colleague?

	00-01	01-02	02-03
	No data		
Yes		77.00	163.00
No		10.00	21.00

One of NASA's goals is to educate and inform others about what NASA does. Do you think the NASA SCIence Files™ has been successful in this regard?

	00-01	01-02	02-03
	No data		
Yes		77.00	178.00
No		2.00	6.00

In your opinion, the information about NASA contained in the NASA SCIence Files™ is…

	00-01	01-02	02-03
	No data		
Very credible		71.00	167.00
Somewhat credible		5.00	11.00
Not credible		0.00	0.00
I'm not able to judge		8.00	15.00

Computers and Associated Technology

Do you have the following equipment in your (classroom, school, home)?

	00-01	01-02	02-03
Television			
Classroom	105.00	80.00	156.00
School	106.00	63.00	162.00
Home	132.00	82.00	191.00
VCR			
Classroom	94.00	78.00	140.00
School	106.00	66.00	155.00
Home	128.00	81.00	186.00
Video Camera			
Classroom	18.00	19.00	48.00
School	101.00	67.00	138.00
Home	65.00	49.00	99.00
Laserdisc Player			
Classroom	25.00	27.00	38.00
School	66.00	46.00	78.00
Home	24.00	8.00	22.00
Video editing equipment			
Classroom	3.00	3.00	No data
School	30.00	32.00	No data
Home	15.00	6.00	No data
Computer			
Classroom	120.00	85.00	167.00
School	131.00	69.00	163.00
Home	124.00	77.00	185.00
DVD			
Classroom	8.00	12.00	37.00
School	24.00	23.00	64.00
Home	39.00	46.00	133.00
Videoconferencing			
Classroom	No data	No data	7.00
School	No data	No data	34.00
Home	No data	No data	9.00

Does your computer have the following in your_____?

	00-01	01-02	02-03
CD-ROM			
Classroom	115.00	82.00	No data
School	103.00	71.00	185.00
Home	130.00	80.00	181.00
Local Area Network			
Classroom	70.00	No data	No data
School	69.00	No data	No data
Home	2.00	No data	No data
District-Wide Network			
Classroom	70.00	No data	No data
School	71.00	No data	No data
Home	No data	No data	No data
Internet connection			
Classroom	101.00	78.00	No data
School	104.00	70.00	182.00
Home	109.00	77.00	185.00
DVD			
Classroom	No data	14.00	No data
School	No data	18.00	53.00
Home	No data	34.00	112.00

How many computers are in your classroom?

	00-01	01-02	02-03
Mean	3.21	6.43	5.23
Median	2.00	3.00	3.00
Standard deviation	4.63	19.30	7.33
Minimum	0.00	1.00	0.00
Maximum	29.00	182.00	40.00
Count	142.00	93.00	176.00

Longitudinal mean
4.96

The operating system used on your school computers is

	00-01	01-02	02-03
Macintosh	32.00	14.00	No data
Windows	80.00	67.00	No data
Both	17.00	11.00	No data
Windows XP	No data	No data	37.00
Windows 2000	No data	No data	32.00
Windows ME	No data	No data	4.00
Windows 98	No data	No data	63.00
Windows 95	No data	No data	10.00
Windows 3.1	No data	No data	0.00
Macintosh OS X	No data	No data	12.00
Macintosh OS 9.x	No data	No data	15.00
Macintosh OS 8.x	No data	No data	6.00

Have you and your students ever participated in an electronic/virtual field trip or videoconference?

	00-01	01-02	02-03
Yes	No data	No data	62.00
No	No data	No data	127.00

In a given month, about how many times does a typical student use a computer in your classroom?

	00-01	01-02	02-03
1-5 times	50.00	19.00	41.00
6-10 times	26.00	19.00	47.00
11-20 times	20.00	16.00	39.00
21-40 times	24.00	27.00	39.00
41+ times	11.00	6.00	20.00

Generally speaking, how do the students operate the computers in your classroom?

	00-01	01-02	02-03
one student per	68.00	38.00	74.00
in pairs (2)	41.00	23.00	74.00
in groups of 3-5	10.00	8.00	22.00
as a class	4.00	10.00	11.00
other	4.00	No data	No data

My classroom connection to the Internet uses a _____.

	00-01	01-02	02-03
28.8 modem	6.00	0.00	8.00
56-K flex modem	14.00	8.00	17.00
cable modem	12.00	13.00	28.00
T-1 line	26.00	37.00	81.00
do not have one	15.00	5.00	5.00
do not know	44.00	25.00	52.00

The school-based technology training provided by my school division improved my computer skills.

	00-01	01-02	02-03
Mean	3.39	3.66	3.77
Median	3.00	4.00	4.00
Standard deviation	1.35	1.34	1.17
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00
Count	94.00	67.00	120.00
No opinion	9.00	6.00	22.00

Longitudinal mean
3.61

Which of the following are among the objectives you have for student computer use?

	00-01	01-02	02-03
Higher order thinking skills	97.00	70.00	166.00
Mastering skills just taught	82.00	59.00	129.00
Remediation of skills not learned well	83.00	53.00	111.00
Expressing ideas in writing	87.00	62.00	126.00
Communicating electronically with others	44.00	42.00	88.00
Finding out about ideas and information	106.00	73.00	168.00
Analyzing information	65.00	49.00	133.00
Presenting information to an audience	53.00	53.00	122.00
Improving computer skills	90.00	70.00	146.00
Learning to work collaboratively	71.00	60.00	134.00
Learning to work independently	83.00	68.00	135.00
Other	No data	No data	22.00

In which of these ways do you use computers to prepare lessons or in other professional activities?

	00-01	01-02	02-03
a. to record or calculate student grades			
do not use	46.00	31.00	44.00
occasionally	25.00	12.00	24.00
weekly	20.00	12.00	40.00
more often	41.00	37.00	84.00
b. to make handouts for students			
do not use	3.00	1.00	4.00
occasionally	38.00	24.00	43.00
weekly	42.00	24.00	54.00
more often	50.00	44.00	90.00
c. to correspond with parents			
do not use	43.00	24.00	43.00
occasionally	54.00	41.00	86.00
weekly	27.00	17.00	35.00
more often	10.00	12.00	25.00
d. to write lesson plans or related notes			
do not use	23.00	12.00	23.00
occasionally	52.00	21.00	36.00
weekly	31.00	32.00	57.00
more often	29.00	29.00	73.00
e. to get information or pictures from the Internet for use in lessons			
do not use	11.00	6.00	5.00
occasionally	64.00	31.00	43.00
weekly	26.00	26.00	48.00
more often	34.00	29.00	93.00
f. to use camcorders, digital cameras, or scanners to prepare for class			
do not use	68.00	32.00	56.00
occasionally	46.00	38.00	79.00
weekly	11.00	11.00	29.00
more often	9.00	12.00	26.00
g. to exchange computer files with other teachers (including email and attachments)			
do not use	76.00	56.00	26.00
occasionally	46.00	24.00	63.00
weekly	5.00	5.00	26.00
more often	8.00	8.00	74.00
h. to post student work, suggestions for resources, or ideas/opinions on the Web			
do not use	89.00	34.00	104.00
occasionally	31.00	9.00	51.00
weekly	7.00	10.00	20.00
more often	6.00	36.00	14.00

Demographics

Gender

	00-01	01-02	02-03
Male	35.00	27.00	35.00
Female	110.00	68.00	164.00
n=	145.00	95.00	199.00

Present professional duties?

	00-01	01-02	02-03
Teacher	137.00	76.00	147.00
Home Schooler	8.00	5.00	24.00
Technology Program Coordinator	5.00	10.00	14.00
Principal	1.00	4.00	3.00
Math Coordinator	7.00	2.00	6.00
Science Coordinator	29.00	21.00	30.00
Librarian/Media Specialist	1.00	4.00	15.00
Community College Instructor	1.00	0.00	0.00
College/University Instructor	2.00	5.00	4.00
Distance Learning Coordinator	2.00	4.00	3.00
Curriculum Coordinator	0.00	3.00	5.00
Pre-Service Teacher	1.00	0.00	No data
Pre-Service Educator	0.00	1.00	No data
Other	11.00	11.00	24.00

School Type

	00-01	01-02	02-03
College/University	4.00	2.00	0.00
Community College	0.00	1.00	1.00
Home School	8.00	5.00	22.00
Native American	1.00	1.00	0.00
Private/Parochial	16.00	11.00	15.00
Public	115.00	80.00	159.00
n =	144.00	100.00	197.00

School Location

	00-01	01-02	02-03
Rural	50.00	33.00	54.00
Suburban	46.00	38.00	77.00
Urban	50.00	26.00	66.00
n =	146.00	97.00	197.00

Highest Degree

	00-01	01-02	02-03
High School Diploma	1.00	4.00	9.00
Associates (2 year)	2.00	0.00	8.00
Baccalaureate	29.00	25.00	53.00
Masters/Equivalent	48.00	54.00	121.00
Doctorate	9.00	11.00	5.00
Educational Specialist	4.00	5.00	15.00
n=	93.00	99.00	211.00

Ethnicity

	00-01	01-02	02-03
African American	8.00	3.00	11.00
Asian	3.00	0.00	2.00
Caucasian	114.00	85.00	170.00
Hispanic	8.00	7.00	6.00
Native American	1.00	1.00	3.00
Pacific Islander	0.00	0.00	0.00
Other	3.00	0.00	10.00
n =	137.00	96.00	202.00

Years as Educator

	00-01	01-02	02-03
Mean	17.19	19.91	15.57
Median	16.00	20.00	14.00
Standard deviation	9.98	9.30	10.15
Minimum	0.00	0.00	0.00
Maximum	29.00	36.00	39.00
Count	141.00	93.00	201.00

Longitudinal mean
17.56

Age

	00-01	01-02	02-03
Mean	45.01	47.60	47.94
Median	47.00	49.00	49.00
Standard deviation	9.83	7.54	7.55
Minimum	3.00	25.00	25.00
Maximum	65.00	63.00	64.00
Count	136.00	89.00	191.00

Longitudinal mean
46.85

Do you own a personal computer?

	00-01	01-02	02-03
Yes	92.00	92.00	117.00
No	62.00	4.00	6.00
n =	154.00	96.00	123.00

Are you a member of a professional (national) education organization?

	00-01	01-02	02-03
Yes	No data	No data	152.00
No	No data	No data	41.00
n =	No data	No data	193.00

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14. ABSTRACT

NASA SCIence Files™ is a research-, inquiry-, and standards-based, integrated mathematics, science, and technology series of 60-minute instructional distance learning (television and web-based) programs for students in grades 3–5. Respondents who evaluated the programs in the 2002–2003 NASA SCIence Files™ series reported that (1) they used the programs in the series; (2) the goals and objectives for the series were met; (3) the programs were aligned with the national mathematics, science, and technology standards; (4) the program content was developmentally appropriate for grade level; and (5) the programs in the series enhanced and enriched the teaching of mathematics, science, and technology.

15. SUBJECT TERMS

NASA SCIence Files™; Program assessment; Survey research

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