

**EVALUATION RESULTS OF THE
DELAWARE CHALLENGE GRANT PROJECT**

**LEAD EDUCATION AGENCY:
CAPITAL SCHOOL DISTRICT**

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EXECUTIVE SUMMARY

In 1995, the U.S. Department of Education awarded a five-year Technology Innovation Challenge Grant (TICG) to the Capital School District in Dover, Delaware. This report details evaluation findings from the five years of Delaware's TICG implementation. The Delaware Challenge project targets elementary school students and employs Lightspan™ educational software in the classroom on desktop computers and at home on Sony Playstations™. The primary focus of this five-year evaluation is to provide information regarding how well the project has met its primary goals:

- ☑ generating more time for learning;
- ☑ increasing parent involvement in their child's education;
- ☑ providing professional development for teachers and other school staff;
- ☑ providing equitable access to technology and the information infrastructure; and
- ☑ improving student learning.

The evaluation of the Delaware Challenge project has proceeded along three lines of activity: 1) formative evaluation to provide relevant information to the project staff; 2) impact studies to assess the impact of the initiative on students and schools as it relates to teaching and learning; and 3) implementation assessment to determine how closely the project's actual implementation matches its intended implementation. The Year 5 Evaluation focused primarily on component 2; data to measure the progress towards project goals were collected using a variety of methods including surveys, interviews, self-report usage logs, and achievement tests. Selected evaluation results are highlighted below.

CLASSROOM USAGE

- 📖 The Lightspan software is used most often in the classroom as an individual or small group activity, rather than as a whole class activity. Further, teachers reported the software is used most often (76.5%) for reinforcement or enrichment.
- 📖 On average, teachers reported spending about 8 hours a week (or 1 ½ hours a day) using the Lightspan software in the classroom. Teachers indicated that they used software more often for mathematics instruction (60.3%) than for reading instruction (48.4%).

HOME USAGE

- 👤 In most classrooms, the teacher managed the home-to-school connection (i.e., the teacher decided which Lightspan CD to send home with students each week). However, in about one quarter of the classrooms, the teacher did not manage the home-to-school connection.
- 👤 When students used the Lightspan software at home, they tended to use it for a half hour or more, most often by themselves. About two-thirds of students indicated they *sometimes* or *always* use Lightspan at home with a grown-up (usually a parent).
- 👤 Almost three-quarters of the students surveyed said they would (sometimes or always) rather use the programs than watch TV. For four consecutive years, the

evaluation has found that students who use the Lightspan programs at home with a parent prefer the software to watching TV.

STUDENT AND PARENT PERCEPTIONS

☺☺☺ Nearly all students said they thought the Lightspan programs were fun to use, both at school and at home. Most parents said the project had been a positive experience and the Lightspan CD-ROMs were great learning tools for their child.

☺☺☺ When asked about behavioral changes they had observed since their child's involvement with the project, many parents reported the amount of time their child spent . . . 1) watching television had decreased, 2) doing schoolwork had increased, and 3) participating in family activities had increased.

STUDENT ACHIEVEMENT

☒ As would be expected in any given academic year, second grade student scaled scores on both the reading and mathematics achievement tests increased significantly from the pretest to the posttest. In relation to a national reference population, second grade students on average gained 25 percentile points in reading and 36 percentile points in mathematics, as compared to the national reference population.

☒ Like the second grade results, fourth grade student scaled scores on the mathematics achievement test increased significantly from the fall pretest to the spring posttest. However, fourth grade reading scaled scores did not increase significantly over the course of the year. Further, fourth graders who participated in Lightspan did *not* significantly increase their standing in relation to the national reference group in either reading or mathematics. In fact, fourth graders declined a significant 7 percentile points in reading over the course of the academic year.

☒ Students who tested in the lower two quartiles during the fall testing experienced *much higher* reading and mathematics gains than students whose fall achievement scores were above the 50th percentile. While many students who tested above the median in the fall had no or moderate change in percentile, on average fourth graders who tested in the highest quartile in the fall experienced significant percentile declines in reading and mathematics during the academic year.

The full report (T00-012) provides a detailed accounting of all evaluation results for the Delaware Challenge project, as well as recommendations for continued implementation of the Delaware Challenge project across elementary schools in Delaware. Researchers at the University of Delaware Education Research and Development Center (R&D Center) are available to answer questions regarding analyses presented in this report or to assist in their interpretation. R&D Center staff may be contacted via electronic mail at ud-rdc@udel.edu or by phone at (302) 831-4433.

INTRODUCTION

In the 1995-1996 school year, the University of Delaware Education Research & Development Center accepted a contract to conduct a statewide evaluation of the recently awarded Delaware Challenge Grant. This project and its attendant evaluation are funded through the U.S. Department of Education's Technology Innovation Challenge Grant program. The Delaware Challenge project targets elementary school students and employs Lightspan educational software in the classroom on desktop computers and at home on Sony Playstations. The purpose of the evaluation is to provide relevant information regarding the project implementation and its impact on student learning for both project improvement and accountability purposes.

In the Challenge Grant application submitted through Delaware's Capital School District in 1995, the goals of the project included the following:

- ❑ To generate more time for learning;
- ❑ To increase parent involvement in their child's education;
- ❑ To provide professional development for teachers and other school staff; and
- ❑ To provide equitable access to technology and the information infrastructure.

In addition, an overarching goal of the project is

- ❑ To improve student learning.

Therefore, the primary focus of this evaluation is to provide information regarding how well the Delaware Challenge project has met these five goals.

The evaluation of the Delaware Challenge Grant has proceeded along three lines of activity:

- 1) formative evaluation to provide relevant information to the project directors;
- 2) impact studies to assess the impact of the initiative on students and schools as it relates to teaching and learning; and
- 3) implementation assessment to determine how closely the project's actual implementation matches its intended implementation.

During the 1999-2000 school year, thirty-three public elementary schools and three parochial elementary schools participated in the Delaware Challenge project. The schools spanned fifteen school districts (including at least one elementary school from every school district in the state that has an elementary school) and the Catholic Diocese of Wilmington. Figure 1 provides a listing of the participating elementary schools and their associated school districts.

SCHOOL	DISTRICT	SCHOOL	DISTRICT
Bannecker	Milford	North Dover	Capital
Booker T. Washington	Capital	North Smyrna	Smyrna
Brookside	Christina	Redding Middle	Appoquinimink
Christ Our King	Catholic Diocese	Rehoboth	Cape Henlopen
Clayton	Smyrna	Richey	Red Clay
Darley Road	Brandywine	Seaford Central	Seaford
Drew Pyle	Christina	Shields	Cape Henlopen
Dunbar	Laurel	Silver Lake	Appoquinimink
East Dover	Capital	Simpson	Caesar Rodney
Fairview	Capital	Smyrna	Smyrna
Frankford	Indian River	South Dover	Capital
H.O. Brittingham	Cape Henlopen	St. Anthony of Padua	Catholic Diocese
Hartly	Capital	St. Peter’s Cathedral	Catholic Diocese
Lake Forest South	Lake Forest	Towne Point	Capital
Lewis	Red Clay	Townsend	Appoquinimink
Lulu Ross	Milford	William Henry Middle	Capital
Maclary	Christina	Wilmington Manor	Colonial
Maple Lane	Brandywine	Woodbridge	Woodbridge

Figure 1: Participating Schools

Ten of these schools have been participating in the Delaware Challenge project for about five years, eleven for three to four years, and fifteen for one to two years. In addition eight of these schools were selected as *target* evaluation schools, in which a more detailed evaluation of the implementation and outcomes were administered. The target evaluation will be discussed in more detail in the following section.

METHODOLOGY

INTRODUCTION

The evaluation of the Delaware Challenge Grant began during the 1995-1996 school year with the collection of usage and perception data. Each year, the evaluation has been refined to further inform the theories underlying the project. Student achievement was measured for the first time in the 1997-1998 school year. During the 1998-1999 school year, the implementation of the Delaware Challenge project was evaluated through a series of case studies to determine, to the extent possible, whether the outcomes measured were indeed attributable to the project’s implementation. The Concerns Based Adoption Model (CBAM) Levels of Use framework was used in conjunction with impact data to interpret outcomes in light of the underlying project

theories (see Technical Report publication T99-009 for more information). This past school year (1999-2000), the Delaware Education Research & Development Center’s evaluation of the Delaware Challenge Grant focused primarily on three aspects of the project:

- ❑ home and classroom usage of the Lightspan software;
- ❑ perceptions of students, parents, and school staff regarding the project; and
- ❑ student achievement in reading and mathematics.

While all project schools participated to some extent in the evaluation, eight target schools were chosen for a more in-depth evaluation. All schools participated in end-of-year surveys. Target school classrooms also provided classroom usage data, home usage data and participated in fall and spring achievement testing; these additional data were intended to provide linkages between home usage of the software, classroom usage of the software, and student learning in mathematics and reading.

THEORY-BASED EVALUATION AND LOGIC MAPPING

The overarching goal of Delaware’s Challenge Grant is to increase student learning. Theory-based evaluation methods were used to document why project staff believe this intervention will result in an increase in learning. The critical theories behind this project are that through extending the learning day as well as through increased parent involvement in education, student learning will improve. It is important to note that there are other theories project staff believe may aid in reaching their ultimate goal, such as improving teaching strategies and making learning fun through technology, that were not specifically studied through this research.

Based on these theories, classroom usage and student home usage of the software were collected (the hypothesis supposes that student learning time will increase prior to seeing an increase in achievement). Also collected was the amount of time the parent spends with the student at home on the software (the hypothesis presumes parent involvement will increase prior to seeing an increase in achievement). Figure 2 shows an abbreviated theory-based outcome grid for the Delaware Challenge project. A logic map illustrating these theories is provided in Figure 3 on the following page.

Early Results	Intermediate Results	Long-Term Results
<ul style="list-style-type: none"> ➤ Use of Lightspan software at home ➤ Use of Lightspan software in the classroom ➤ More time spent on educational activities at home 	<ul style="list-style-type: none"> ➤ Improved student attitudes towards learning ➤ Increased parent involvement with their child’s education 	<ul style="list-style-type: none"> ➤ Improved educational achievement of students (better test scores)

Figure 2: Theory-Based Evaluation Outcome Grid

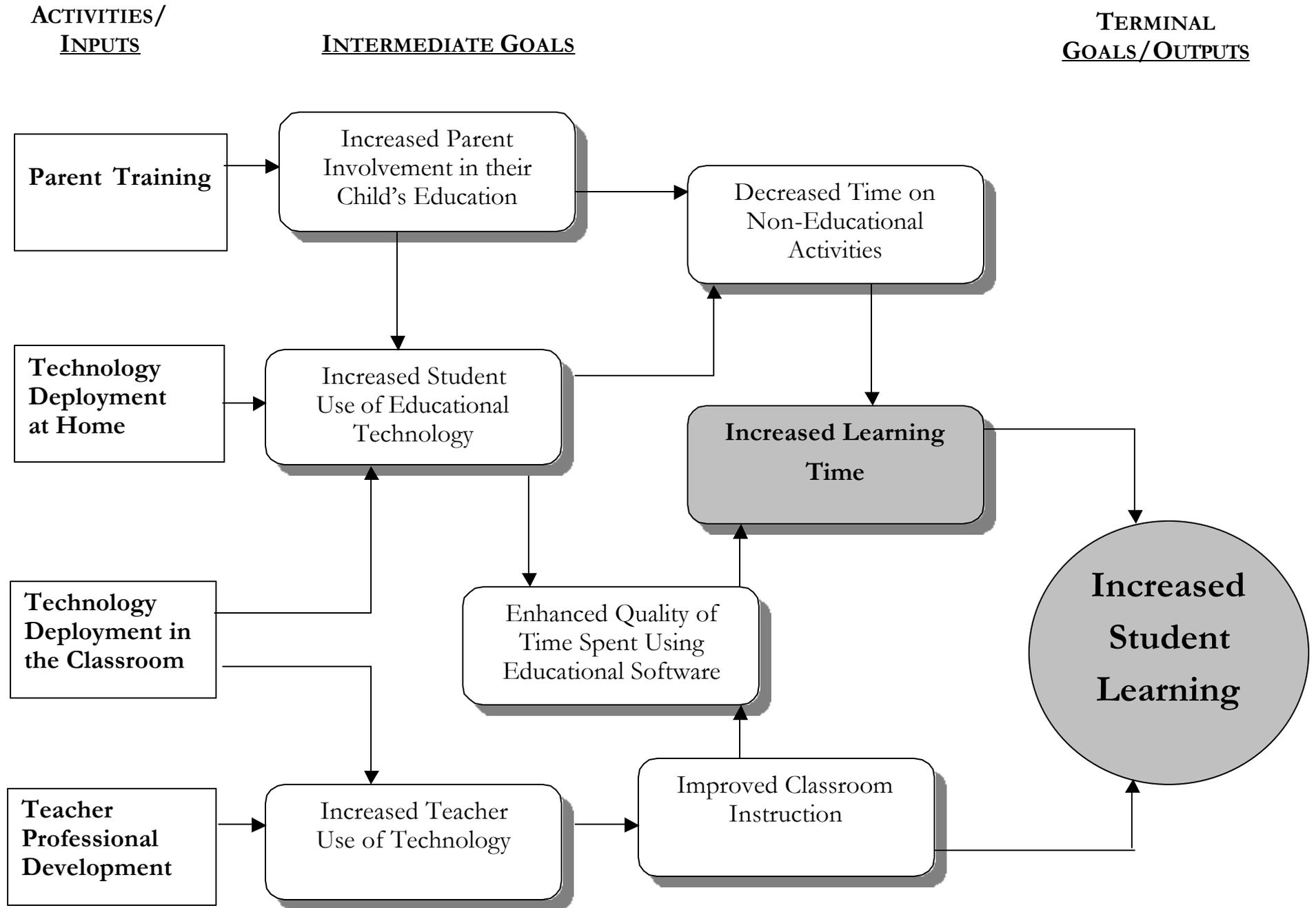


Figure 3: Logic Map for Delaware Challenge Grant Project

CLASSROOM USAGE AND PERCEPTIONS

Data regarding the usage of Lightspan software in the classroom were collected from classroom teachers weekly via a form on the World Wide Web. During the 1998-1999 school year, approximately 32 teachers completed over 413 weekly logs. The classroom log gathered information on what programs were used, who was using them, how often they were used, and how they were used. An example of the classroom log is provided in Appendix A.

The perceptions of students, parents, and school staff were assessed through surveys, telephone interviews, and face-to-face interviews. Students were administered a ten-item survey during May of the school year. About 1,800 students completed this survey. Also, during the summer, 65 telephone interviews were conducted with parents whose children had participated in the home component of the Delaware Challenge project.

School staff were administered an end-of-year survey; selected school staff also participated in face-to-face or telephone interviews. Over one hundred school staff completed the perception survey. Staff from several participating schools that had been involved with the program for about two years were also interviewed to determine project satisfaction, perceptions, and experiences. The student survey, parent interview protocol, staff survey, and staff interview protocol are provided in Appendix A.

TARGET SCHOOL EVALUATION

As stated previously, this year's evaluation centered largely on eight target schools, purposefully chosen because of their involvement and success with the program (in addition to other factors, such as geographic location and student population). Target school data were used to examine linkages between achievement and usage data sources. Specifically, the relationship between classroom and home usage of the software and gains in student learning was examined.

Home usage data were collected from parents of target school students via weekly usage logs. About 3,000 weekly logs were collected from the second and fourth graders who attended the eight target schools. The home usage log gathered information regarding the length of use of the Lightspan software and who was using the software. An example of the home usage log is provided in Appendix A.

Reading and mathematics fall (pretest) and spring (posttest) achievement tests were administered to target school students participating in the program in second and fourth grades. Second and fourth graders were given the SAT9 open-ended format in both the fall and spring. Over 350 second graders and about 325 fourth graders participated in fall and spring achievement testing.

Results from each aspect of the evaluation are discussed in the following section. Other analyses can be generated upon request. The Delaware Challenge project evaluation plan is included in Appendix B.

RESULTS PART 1: OVERALL

The results detailed in this section are presented along several lines: (a) classroom and home usage of the Lightspan software; (b) perceptions of students, parents, and school staff regarding the project; and (c) reading and mathematics student achievement.

PROGRAM USAGE – CLASSROOM

Teachers were asked to complete weekly logs (submitted via a form on the World Wide Web) indicating how often they used the Lightspan software. During the school year, approximately 32 teachers completed over 413 weekly logs. Analysis of the classroom logs found that teachers spent on average about eight hours a week (or about 1 1/2 hours a day) using the Lightspan software in the classroom.

The software was most often used as an individual or small group activity. In fact, most teacher logs (80.9%) indicated that the software was used as part of a small group or individual activity on the computer at least once a week. Over one-third (38.3%) of the teacher logs reported having students work individually or in small groups with the software *five* days a week. The software was less often used in a whole class activity; about one-quarter of the teacher logs (26.4%) reported weekly use of the Lightspan software as a whole class activity.

The software was also used most often in the classroom for reinforcement or enrichment. Over three quarters of the teacher logs (76.5%) indicated that the software was used for reinforcement of classroom lessons. Less than 10% of the logs indicated that the software had been implemented as an integral part of the curriculum. Table 2 details the classroom software utilization by instructional approach.

Table 2: Utilization by Instructional Approach (N=413)

Number of Days Used Per Week	Type of Instructional Approach Utilized (Percent Utilization)			
	Whole Class Activity	Small Group Activity	Integral Part of Unit	Reinforcement or Enrichment
No Days	73.6%	19.1%	90.3%	23.5%
One-Two Days	23.8%	17.9%	7.3%	19.1%
Three-Five Days	2.6%	63.0%	2.5%	57.4%

Teacher logs also indicated that the Lightspan software was used most frequently for mathematics instruction. Over half of teacher logs (60.3%) indicated that the Lightspan software was used weekly for mathematics instruction. Slightly less than half of

teachers logs (48.4%) indicated that the Lightspan software was used weekly for reading instruction. Table 3 details the classroom software utilization by content area.

Table 3: Utilization by Content Area (N=413)

Number of Days Used Per Week	Content Area Utilized (Percent Utilization)		
	Mathematics	Reading	Writing
No Days	39.7%	51.6%	90.8%
One-Two Days	17.0%	13.8%	3.9%
Three-Five Days	43.3%	34.6%	5.3%

The Internet is becoming an increasingly important part of the Lightspan project. While the project began primarily as software available on CD-ROM, the Lightspan Network (an Internet site available to schools participating in the project) has provided teachers with a variety of Internet activities and tools. Teachers can use the Lightspan Network to compete and collaborate on educational activities with classrooms across the country. In addition, the Lightspan Network can be used to write letters to characters introduced through the Lightspan CD-ROMs or to access on-line encyclopedias. Teachers reported using the Lightspan Network approximately 1/2 hour per week (or 30 minutes).

PROGRAM USAGE – HOME

Parents of target school students were asked to complete logs indicating how often their child uses the Lightspan software at home. These logs were completed weekly and returned to the classroom teacher. Over 2,858 monthly logs were collected from second and fourth graders who attended the eight target schools.

Home usage logs indicated that students use the Lightspan software at home most often by themselves. In fact, over half (65.2%) of the occasions when students use the software at home, they are using it by themselves. One-fifth (20.0%) of the time students report using the software, they are using it with other children (either a sibling or friend). About one-tenth (10.7%) of the time students use the software with their parents (see Table 4).

When students use the Playstation at home, they often (50.3% of the time) use it for a half hour or more. Approximately one-half (49.7%) of the time they use it for less than 30 minutes. Nearly all of the time (88.8%) students use their Playstation at home, they are using Lightspan software. Usage did not differ much by the day of the week, however students did use the software slightly more on Fridays and Saturdays than on other days. This is most likely because most teachers distributed new disks to the students on Fridays.

Table 4: Persons Utilizing the Lightspan Software in the Home (N=16,482)

Person(s) Using Software with Child	Percent of Occasions Using Software
Child	65.2%
Brother or Sister	16.2%
Parent(s)	10.7%
Friend	3.8%
Other	4.1%

PERCEPTIONS – STUDENTS

At the end of the academic year, students were asked to complete a survey indicating their attitudes towards computers and the Lightspan programs. Almost 1,800 students completed this survey. Tables 5 and 6 include the results from the student survey.

Very few students (1.9%) thought computers were scary. Nearly all students (95.2%) reported that the programs were fun to use. Most students (90.8%) also reported that they like to use the programs at school at least sometimes. Similarly, many (88.4%) like having the programs to use at home. Over two-thirds of students (61.6%) indicated that they sometimes work on the computer at home with a grown-up. Most of these students (75.3%) said the grown-up they work with is a parent.

Nearly three-quarters (72.4%) of the students surveyed said they would (sometimes or always) rather use the programs than watch TV. About one-quarter (27.6%) indicated that they would rather watch TV than use the Lightspan programs. Of those who said they would rather use Lightspan programs, over two-thirds (68.4%) reported that they work with a grown-up on the computer at least sometimes. Of those who said they would rather watch TV, nearly half (47.9%) said they did not work with a grown-up at home on the computer. A similar relationship between working at home with a parent and a preference for using the educational program over watching TV has been found consistently throughout the evaluation, i.e., four consecutive years. Clearly there is a connection between parent involvement and how a child chooses to spend his or her time at home.

Nearly all students surveyed said they always try their best at school (95.7%) and that they like their teacher (94.0%). Most also said that they always did their homework (89.7%) and that they liked school (76.8%).

TABLE 5: RESULTS OF STUDENT SURVEY (N=1,793)

ITEM	RESPONSES			
	Yes	Some-Times	No	Mean (Sd)
Using the computer is scary.	<u>1.9%</u> (33)	<u>11.3%</u> (200)	<u>86.8%</u> (1534)	<u>2.85</u> (.40)
The programs are fun to use.	<u>71.0%</u> (1257)	<u>24.2%</u> (428)	<u>4.9%</u> (86)	<u>1.33</u> (.56)
I like having the programs at home to use.	<u>65.2%</u> (1086)	<u>23.2%</u> (388)	<u>11.5%</u> (192)	<u>1.46</u> (.69)
At home, I would rather use these programs than watch TV.	<u>30.3%</u> (521)	<u>42.1%</u> (724)	<u>27.6%</u> (474)	<u>1.97</u> (.76)
These programs are too hard for me to do.	<u>6.7%</u> (117)	<u>30.6%</u> (536)	<u>62.6%</u> (1095)	<u>2.57</u> (.91)
I like it when my teacher shows the programs to the class.	<u>71.4%</u> (1249)	<u>18.1%</u> (316)	<u>10.5%</u> (184)	<u>1.39</u> (.67)
I like it when I get to use the programs at school.	<u>67.1%</u> (1164)	<u>23.7%</u> (411)	<u>9.2%</u> (159)	<u>1.42</u> (.65)
When I use the computer at school, I work with a buddy or two.	<u>32.8%</u> (576)	<u>40.0%</u> (702)	<u>27.2%</u> (478)	<u>1.94</u> (.77)
I get to help choose what we work on with the computer.	<u>22.4%</u> (392)	<u>35.1%</u> (615)	<u>42.5%</u> (745)	<u>2.20</u> (.78)
At home, a grown-up and I work together on the computer.	<u>35.4%</u> (607)	<u>26.2%</u> (450)	<u>38.4%</u> (659)	<u>2.03</u> (.85)

IF YES, WHO:

	NUMBER	PERCENT
<input checked="" type="checkbox"/> Mother	348	42.7%
<input checked="" type="checkbox"/> Both Parents	142	17.4%
<input checked="" type="checkbox"/> Father	124	15.2%
<input checked="" type="checkbox"/> Sibling(s)	68	8.3%
<input checked="" type="checkbox"/> Other	133	16.4%

ITEM	RESPONSES		
	Mostly True	Mostly False	Mean (Sd)
You like school.	<u>76.8%</u> (1344)	<u>23.2%</u> (407)	<u>1.23</u> (.42)
Most of the time, you don't want to go to school.	<u>45.4%</u> (798)	<u>54.6%</u> (961)	<u>1.54</u> (.49)
You are usually happy when you are in school.	<u>75.6%</u> (1326)	<u>24.4%</u> (429)	<u>1.24</u> (.42)
You always try your best at school.	<u>95.7%</u> (1684)	<u>4.3%</u> (75)	<u>1.04</u> (.20)
You always do your homework.	<u>89.7%</u> (1572)	<u>10.3%</u> (181)	<u>1.10</u> (.30)
You like your teacher.	<u>94.0%</u> (1644)	<u>6.0%</u> (105)	<u>1.06</u> (.23)

TABLE 6: CROSS-TABULATION OF STUDENT RESPONSES (N=1,685)

		At home, I would rather use these programs than watch TV.		
		Yes	Sometimes	No
At home, a grown-up and I work together on the computer.	Yes	13.3%	13.59%	8.5%
	Sometimes	7.2%	13.4%	5.8%
	No	9.5%	15.6%	13.2%

PERCEPTIONS – PARENTS

Parents were asked whether they would be willing to participate in a 10-minute phone interview regarding the Delaware Challenge project. In late spring, sixty-five telephone interviews were conducted with parents of students who had participated in the Lightspan program. Table 7 presents the results from this survey.

Most parents (89.0%) said the project had been a positive experience for their child, and many (89.2%) thought the Lightspan CD-ROMs were great learning tools for children. Many also agreed (88.9%) that the Lightspan software helped their child learn new things. However, about one-third of parents (35.4%) said that the software was too easy for their child, while only a few (9.2%) thought the software was too difficult. The percentage of parents who thought the software was too easy is slightly higher than last year (32.6%) and the year before (28.3%), yet still considerably lower than three years ago (55%).

According to the parents interviewed, most children (89.2%) tended to use the Lightspan software at home independently, at least half of the time. For the past two years, the evaluation has reported parents as saying their child usually used the Lightspan software at home by themselves. Although, most parents this year (93.8%) and many last year (62.0%) also reported that they *have* used the Lightspan CDs together with their child. However, when asked how frequently they used the Lightspan CDs together with their child, over half of parents (53.9%) responded “seldom” or “never.” This is consistent with last year’s evaluation finding.

When asked about behavioral changes they had observed in their child since involvement with the project, parents reported that the amount of time their child spends watching television or videos either stayed the same (58.5%) or decreased (35.4%). On the other hand, parents said the amount of time their child spends doing schoolwork has either stayed the same (72.3%) or increased (24.6%). About one-quarter of parents (23.1%) also said the amount of time their child spends participating in family activities has increased since involvement with the project.

Table 7: Results of Telephone Interviews with Parents (N=65)

ITEM	PERCENT RESPONDING				
	1-2 Months	3-5 Months	Half of the School Year	All Year	More than one Year
Approximately how long did your son or daughter have the Lightspan CDs in your home to use on the Sony Playstation?	3.1%	13.8%	21.5%	58.5%	3.1%
	Always	Most of the Time	About Half of the Time	Seldom	Never
How frequently did your child work <u>independently</u> using the Lightspan CDs?	26.2%	32.3%	30.8%	10.8%	----
How frequently did your child work with you (or other adults in your household) using the Lightspan CDs?	3.1%	9.2%	33.8%	47.7%	6.2%
	Increased		Stayed the Same	Decreased	
Has the amount of time that your child spends watching television or videos increased, stayed about the same, or decreased since involvement with this project?	6.2%		58.5%	35.4%	
Has the amount of time that your child spends doing schoolwork increased, stayed about the same, or decreased since involvement with this project?	24.6%		72.3%	3.1%	
Has the amount of time that your child spends having playtime increased, stayed about the same, or decreased since involvement with this project?	3.1%		76.9%	20.0%	
Has the amount of time that your child spends participating in activities with the family increased, stayed about the same, or decreased since involvement with this project?	23.1%		72.3%	3.1%	

Table 7: Results of Telephone Interviews with Parents (continued)

ITEM	PERCENT RESPONDING				
	Yes	No			
Did you attend a parent training session at your child’s school prior to receiving the Sony Playstation?	76.2%	23.8%			
Did any other adults in your household attend a parent training session at your child’s school prior to receiving the Sony Playstation?	23.8%	76.2%			
	Father	Mother	Grand-parent	Aunt or Uncle	Brother or Sister
If “yes,” could you tell me the relationship of this (these) adult(s) to the child?	57.1%	19%	9.5%	4.8%	9.5%
	Strongly Disagree	Disagree	Agree	Strongly Agree	Don’t Know
The training session I attended was informative.	1.6%	4.7%	32.8%	32.8%	28.1%
I received information on how to get additional help if problems developed.	1.5%	10.8%	46.2%	32.3%	9.2%
Any problems I experienced related to this project were resolved in a timely manner.	1.6%	0.0%	28.1%	32.8%	37.5%
At the end of the training session, I felt confident that I could set-up and use the equipment in my home.	4.8%	3.2%	29%	46.8%	16.1%
The equipment was difficult for me to set-up at home.	41.3%	49.2%	1.6%	4.8%	3.2%
The Lightspan CDs are great learning tools for my child.	3.1%	7.7%	40.0%	49.2%	0.0%
The Lightspan CDs are too easy for my child.	13.8%	47.7%	30.8%	4.6%	3.1%
The Lightspan CDs help my child to learn new things.	1.6%	4.8%	58.7%	30.2%	4.8%
My child enjoys using the Lightspan CDs.	7.8%	7.8%	34.4%	48.4%	1.6%
The Lightspan CDs are too difficult for my child.	24.6%	63.1%	4.6%	4.6%	3.1%
I would like for my child to participate in this project again next year	3.1%	9.2%	43.1%	44.6%	0.0%
The Lightspan CDs should be part of the school’s curriculum.	3.1%	10.8%	46.2%	38.5%	1.5%
Overall, this project has been a positive experience for my child.	3.1%	7.8%	40.6%	48.4%	0.0%

Over three-quarters of the parents (76.2%) interviewed attended a training session for this project. Most of these parents found the training session to be informative (65.6%) and were confident they could effectively set-up and use the equipment at home after the training session (75.8%). In fact, the majority of the parents (90.5%) did not have difficulty setting-up the equipment at home and most (78.5%) received information at the training session on how to get additional help if problems developed. Only a few parents (1.6%) said the problems they experienced related to the project were not resolved in a timely manner.

PERCEPTIONS – SCHOOL STAFF

School staff who participated in the project were asked to complete a written survey indicating their perceptions of the project. Table 8 details the survey results based on over one hundred school staff responses. Findings from this year's staff survey were similar to those of the past two years. For instance, nearly all staff (92.8%) stated that they felt comfortable using computers and most (92.7%) reported that their students enjoyed using the computer programs.

Like last year, most staff said the programs were user-friendly (84.5%) as well as great learning tools for their class (82.6%). Further, well over three-quarters of the respondents indicated that the computer programs helped their students to learn new things (83.4%), were easy for the children to use (83.5%), and age-appropriate for their class (84.5%).

Three years ago, over two-thirds of respondents said project-related problems were not resolved in a timely manner. Two years ago the percentage of staff whose problems were not resolved in a timely manner had decreased to less than half. Last year, the percentage further decreased, with less than one-fifth (15.4%) of respondents reporting that problems were not resolved in a timely manner. This year, the percentage increased slightly to 29.9%; this may be due partly to a decrease in the number of project staff dedicated to technical assistance. Further, about one-quarter of respondents (25.5%) thought the program was not implemented very smoothly and some (21.8%) said the program had not been a positive experience for them. Yet, it is important to note though that over three-quarters of school staff (78.2%) said the program had been a positive experience.

Overall, nearly all (85.0%) of school staff said they were satisfied or very satisfied with the Lightspan project; less than one-quarter (15.0%) said they were not satisfied with the project. Of these staff members, about two-thirds (61.2%) had been involved with the Lightspan project for two or more years; a little over one-third (38.9%) had been involved with the project for about one year or less. Most teachers (71.3%) reported making all decisions about what Lightspan CD to send home with students each week. However, over one-quarter of the teachers (27.7%) said that someone else decides which Lightspan CD to send home with their students.

Table 8: Results of Staff Survey (n=111)

<u>ITEM</u>	<i>Responses</i>				<i>(SD)</i>
	Strongly Agree	Agree	Disagree	Strongly Disagree	
The training session I attended was informative.	<u>27.1%</u> (29)	<u>51.4%</u> (55)	<u>16.8%</u> (18)	<u>4.7%</u> (5)	<u>1.99</u> (.79)
I received information on how to get additional help if problems developed.	<u>43.2%</u> (48)	<u>44.1%</u> (49)	<u>9.9%</u> (11)	<u>2.7%</u> (3)	<u>1.72</u> (.75)
Any problems I experienced were resolved in a timely manner.	<u>31.8%</u> (34)	<u>38.3%</u> (41)	<u>20.6%</u> (22)	<u>9.3%</u> (10)	<u>2.07</u> (.94)
At the end of the training session, I felt confident that I could set-up and use the equipment.	<u>38.2%</u> (42)	<u>35.5%</u> (39)	<u>20.9%</u> (23)	<u>5.5%</u> (6)	<u>1.93</u> (.90)
The equipment was difficult for me to set-up.	<u>8.3%</u> (9)	<u>20.4%</u> (22)	<u>19.4%</u> (21)	<u>51.9%</u> (56)	<u>3.14</u> (1.02)
I feel comfortable using computers.	<u>56.8%</u> (63)	<u>36.0%</u> (40)	<u>7.2%</u> (8)	<u>0.0%</u> (0)	<u>1.50</u> (.63)
The programs are user-friendly.	<u>43.6%</u> (48)	<u>40.9%</u> (45)	<u>13.6%</u> (15)	<u>1.8%</u> (2)	<u>1.73</u> (.76)
The programs are easy for the children to use.	<u>42.2%</u> (46)	<u>41.3%</u> (45)	<u>14.7%</u> (16)	<u>1.8%</u> (2)	<u>1.76</u> (.76)
The children enjoy using the computer programs.	<u>53.6%</u> (59)	<u>39.1%</u> (43)	<u>7.3%</u> (8)	<u>0.0%</u> (0)	<u>1.53</u> (.63)
The programs help the children to learn new things.	<u>44.0%</u> (48)	<u>39.4%</u> (43)	<u>13.8%</u> (15)	<u>2.8%</u> (3)	<u>1.75</u> (.79)
These programs are great learning tools for my class.	<u>52.3%</u> (57)	<u>30.3%</u> (33)	<u>16.5%</u> (18)	<u>0.9%</u> (1)	<u>1.66</u> (.78)
The programs are age-appropriate for my class.	<u>50.0%</u> (55)	<u>34.5%</u> (38)	<u>14.5%</u> (16)	<u>0.9%</u> (1)	<u>1.66</u> (.75)
This program has been a positive experience for me.	<u>47.3%</u> (52)	<u>30.9%</u> (34)	<u>18.2%</u> (20)	<u>3.6%</u> (4)	<u>1.78</u> (.87)
This program was implemented very smoothly.	<u>31.8%</u> (35)	<u>42.7%</u> (47)	<u>19.1%</u> (21)	<u>6.4%</u> (7)	<u>2.00</u> (.87)

TABLE 8: RESULTS OF STAFF SURVEY (CONTINUED)

How long have you been involved with the Lightspan project?

21.4% (22)	12.6% (13)	27.2% (28)	34.0% (35)	4.9% (5)	0.0% (0)
More than three years	About three years	About two years	About one year	Less then six months	I am not involved in the project

How involved have you been with the Lightspan project?

19.4% (20)	45.6% (47)	33.0% (34)	1.9% (2)
Very involved	Moderately involved	A little involved	Not involved at all

How satisfied are you with the Lightspan project?

36.0% (36)	49.0% (49)	15.0% (15)	0.0% (0)
Very satisfied	Satisfied	Not satisfied	Very dissatisfied

Do you decide which Lightspan CD to send home with your students OR is the home distribution handled centrally?

I choose the CDs AND send them home with my students.	68.3% (69)
I choose the CDs BUT someone else handles the distribution.	3.0% (3)
Someone else chooses the CDs BUT I send them home with my students.	16.8% (17)
Someone else chooses the CDs AND someone else handles the distribution.	10.9% (11)
I don't know how this is done.	1.0% (1)

STUDENT ACHIEVEMENT

Reading and mathematics achievement tests were administered to students in the second and fourth grades who participated in the target school program. A pretest was given to students in early fall 1999 and a posttest was administered in late spring 2000. Over 350 second-graders *at four schools across twenty classrooms* and about 325 fourth-graders *at four schools across fifteen classrooms* participated in the achievement testing. Students with missing or incomplete data were excluded from the analyses.

The following sections provide scaled scores, percentile ranks, and stanines. Scaled scores are raw scores that have been converted to make scores in a given content area comparable from form to form and level to level. Percentile ranks range from a low of 1 to a high of 99 and indicate the percentage of the reference group obtaining scores equal to or less than that score. The reference group is a national sample of students at the same grade taking the test at a comparable time of the year. A percentile rank of 50 denotes average performance. Stanines are derived from percentile ranks and also indicate a student's relative standing in a reference group. Stanines are normalized, standard scores that range from a low of 1 to a high of 9. A stanine of 5 denotes average performance. An assumption made in these analyses is that while a student's scaled scores should significantly increase in any given school year, a student's standing in relation to the reference group would not necessarily change between the fall and the spring.

Second Grade Achievement. Table 9 provides the mean scaled score and stanine by semester for second grade reading and mathematics achievement. Scores of second grade Lightspan students for the previous two academic years are provided for reference. As would be expected in any given academic year, student scaled scores on both the reading and mathematics achievement tests increased significantly from the pretest to the posttest. Because no local comparison group was available, the analysis of the gains in student achievement over the school year is based primarily on norm-referenced scores. Unlike scaled scores, one would not necessarily expect significant gains in norm-referenced scores over the course of the school year.

An analysis of stanines revealed that there were significant achievement gains in reading ($p < .001$) and mathematics ($p < .001$). Second grade students on average gained 25 percentile points in reading and 36 percentile points in mathematics. Table 10 shows the normal curve equivalent (NCE) and percentile rank for second graders in reading and mathematics achievement.

Both females and males showed significant gains in reading and mathematics scaled scores ($p < .001$) and NCEs ($p < .001$). Females showed an average increase of 23%tile points and 40%tile points in reading and mathematics, respectively. Males showed an average gain of 25%tile points in reading and 34%tile points in mathematics. Table 11 shows the mean second grade reading and mathematics achievement scores by gender. Further, all four second grade schools participating in the achievement testing showed significant scaled score and NCE growth in both reading and mathematics.

Table 9: Mean Second Grade Reading and Mathematics Achievement Scores

	Reading						Mathematics					
	Fall 1997	Spring 1998	Fall 1998	Spring 1999	Fall 1999	Spring 2000	Fall 1997	Spring 1998	Fall 1998	Spring 1999	Fall 1999	Spring 2000
Scaled Score	539.2	568.1	520.6	566.1	547.7	580.5	559.5	589.1	556.4	586.0	553.8	597.7
Stanine	4.32	5.40	3.54	5.28	4.7	6.0	4.61	5.42	4.36	5.32	4.2	5.9

Table 10: Second Grade Reading and Mathematics NCE and Percentile Rank

	Reading		Mathematics	
	Fall 1999	Spring 2000	Fall 1999	Spring 2000
Normal Curve Equivalent	46.5	59.7	41.1	61.2
Percentile Rank	43	68	34	70

Table 11: Mean Second Grade Reading and Math Achievement Scores by Gender

	Female				Male			
	Reading Fall	Reading Spring	Math Fall	Math Spring	Reading Fall	Reading Spring	Math Fall	Math Spring
Scaled Score	552.1	583.6	552.3	599.3	543.0	576.9	555.3	597.0
NCE	48.4	61.1	39.9	62.2	44.5	58.0	42.3	61.0
Percentile Rank	47	70	32	72	40	65	36	70

Fourth Grade Achievement. Table 12 provides the mean scaled score, stanine, normal curve equivalent (NCE), and percentile rank by semester for fourth grade reading and mathematics achievement. Like the second grade results, fourth grade student scaled scores on the mathematics achievement test increased significantly from the fall pretest to the spring posttest. However, fourth grade reading scaled scores did not increase significantly over the course of the year. Further, fourth graders who participated in Lightspan did *not* significantly increase their standing in relation to the national reference group. In fact, fourth graders declined a significant 7 percentile points in reading over the course of the academic year.

Table 12: Mean Fourth Grade Reading and Mathematics Achievement Scores

	Reading		Mathematics	
	Fall 1999	Spring 2000	Fall 1999	Spring 2000
Scaled Score	606.7	611.0	596.2	605.6
Stanine	5.5	5.2	4.6	4.6
Normal Curve Equivalent	55.6	51.5	46.3	45.7
Percentile Rank	60	53	43	42

Females experienced significant scale score increases in mathematics ($p < .001$), but not in reading. Males also showed significant scale score increases in mathematics ($p < .001$). In reading, males lost a significant nine percentile points ($p < .01$). Table 13 shows the mean second grade reading and mathematics achievement scores by gender.

Table 13: Mean Fourth Grade Reading and Math Achievement Scores by Gender

	Female				Male			
	Reading Fall	Reading Spring	Math Fall	Math Spring	Reading Fall	Reading Spring	Math Fall	Math Spring
Scaled Score	614.9	619.9	597.0	605.8	601.3	604.9	596.2	605.7
NCE	59.5	55.8	46.7	45.7	53.1	48.5	46.3	46.0
Percentile Rank	67	61	44	42	56	47	43	42

Individual school results were mixed. Three of the four fourth grade schools participating in the achievement testing showed significant scaled score growth in mathematics. None of the fourth grade schools showed significant scaled score increases in reading. In fact, two fourth grade schools experienced significant NCE declines in reading.

RESULTS PART 2: UNDERSTANDING THE IMPACT ON ACHIEVEMENT

Because classroom usage data, home usage data, and achievement data were collected for all students in the eight target schools, various relationships between these data sources can be analyzed. In particular, three questions were addressed:

- 1) How does classroom usage relate to achievement gains?
- 2) How does home usage relate to achievement gains?
- 3) Does achievement increase more for some students than others?

CLASSROOM USAGE AND ACHIEVEMENT

To determine the extent to which classroom usage relates to student achievement, teacher reports of the time spent using the software in the classroom were correlated with achievement gains. For second graders, this analysis revealed that the total minutes spent using the software in the classroom was significantly correlated with the

scaled score gain in mathematics achievement ($r=.230$; $p<.01$). The amount of time spent in the classroom using the Internet was also positively correlated with mathematics achievement ($r=.240$; $p<.01$). A small correlation was also found between reading achievement and the amount of time spent using Lightspan in the second grade classroom ($r=.172$; $p<.05$). No significant correlation was found between Lightspan use in the classroom and achievement for fourth graders.

HOME USAGE AND ACHIEVEMENT

A further analysis was conducted to examine the relationship between student achievement gains and the amount of time spent at home on the software. No significant correlation was found between home usage and student achievement for second or fourth graders separately. However, in aggregate (i.e., analyzing data for both second and fourth graders together), a small yet significant correlation was found between mathematics scale score gain and the time spent at home using the software ($r=.141$; $p<.05$).

ACHIEVEMENT GAINS BY QUARTILE

Finally, student scaled score growth was examined by quartile (note: a quartile is the student’s respective percentile ranking divided into four equal categories; a student’s quartile in mathematics and reading were determined by their fall achievement scores). See Figure 4 for a pictorial display of the relationship between percentile ranks and quartiles.

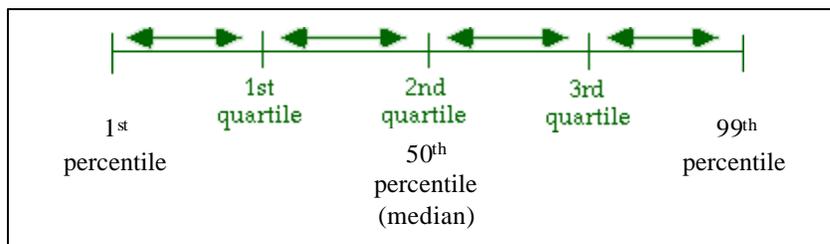


Figure 4: Quartiles and Percentiles

In mathematics, NCE growth was significant in the lower three quartiles and not significant in the highest quartile. In reading, NCE growth was significant in the lower two quartiles, yet not significant in the third quartile. In the highest quartile, a significant reading NCE loss was experienced. When examined by grade level, second graders in the lower two quartiles experienced significant reading and mathematics growth, as compared to the national reference population. For fourth graders, significant growth was realized only by students reading in the bottom quartile. Significant declines were found in both reading and mathematics NCEs for students

initially testing in the highest quartile. Table 14 provides normal curve equivalent (NCE) growth and the corresponding number of students in each quartile.

Table 14: Achievement Gain (in NCEs) by Quartile

	Second Grade				Fourth Grade			
	N	Reading	N	Math	N	Reading	N	Math
Quartile 1	110	31.3**	135	24.8**	50	17.3**	94	3.2
Quartile 2	70	14.4**	97	18.9**	68	3.0	94	0.5
Quartile 3	74	4.5	50	12.2**	61	-9.2**	67	0.5
Quartile 4	61	-6.4*	32	6.0	101	-16.2**	28	-19.3**

**p<.001; *p<.01

Analyses of disaggregated student achievement data suggest that the Lightspan implementation be focused on underachieving students, i.e., students who test below the median. Analyses also suggest that the Lightspan implementation be focused in the lower grades, as second grade students seemed to have much better results after use of the program.

RESULTS PART 3: IMPLEMENTATION – TEACHER INTERVIEWS

In order to learn more about teacher perceptions of the Lightspan software as an educational tool, this study focuses on a series of teacher interviews on how the program was implemented, maintained, and perceived by children, parents, and educators. The qualitative methods of coding and interpretation of the interviewing data (i.e. an ethnographic approach) intend to enable an examination of the Lightspan program as it is used in the classroom. This section, organized into six topical areas, presents a summary of the findings from teacher interviews regarding their perception of the Lightspan program.

TOPIC 1: TEACHER'S INVOLVEMENT WITH THE LIGHTSPAN PROGRAM AND ASSESSMENT OF STUDENTS' HOME USE

- The software enhanced and extended the classroom's learning and motivated students to construct their own learning experiences.

In regard to the first topic, the question of the teachers' involvement with the Lightspan software, it was found that one third of the interviewed teachers have used

the program for one year, and two-thirds of them have used it for a second year. In other words, most of the teachers have had some experience using the software whereas the minority of them had limited or no experience. These assessments of experience in terms of time corresponded to the teachers' responses to questions about being comfortable with the software, level of familiarity, and prior specific knowledge. It was evident that the more experience the teacher had, the more accommodating the program was in the classroom and the easier it was to manage the CDs and the corresponding worksheets. Furthermore, these assessments corresponded to teachers' articulations of how well the software was aligned with their curriculum, and how powerful the software was in promoting their classroom's subject matter.

All of the interviewed teachers responded positively to the question about the main goal of the Lightspan program, that is, extending the learning day through home-school connection. Teachers responded unequivocally that children use the software at home in a way that extends the classroom curriculum. Although teachers noted that it was difficult to define exactly the quality of these experiences. However, teachers did say that, in general, subsequent to the software use at home children seemed to be more enthusiastic and involved with the related activities. The teachers described how attractive and engaging the program was for the children, and how their parents expressed appreciation for the program's effectiveness in encouraging learning at home. The CDs motivated students to spend more time on educational activities outside the classroom, and the use of the program at home enhanced their understanding of the content. One teacher articulated clearly:

"It reinforces more than anything else -- [it] reinforces the skills that are taught in the classroom. I think that's the most beneficial aspect of the program."

Students spent more time on educational activities outside the classroom, "because the parents now see the connection, the correlation with what's happening in school and what they are bringing home."

"It's definitely working . . . we have ten teachers and about a hundred and forty-five students. They are taking the math and reading disks home on a weekly basis, and are discussing them in class and so on and so forth, and I think it's definitely effective."

TOPIC 2: TEACHER'S MANAGEMENT OF THE LIGHTSPAN PROGRAM AND ASSESSMENT OF PARENTS' SUPPORT

- As teachers gained more experience with the program, their management of it was more practical thus advantageous to the classroom learning.
- Teachers noted that in general parents were highly supportive of the program's home use as they discovered the program's capacity in attracting and capturing their children's attention.

Most of the teachers said that they make their own decisions in regard to the management of the program, including choosing the weekly CD. Their selection of a

specific CD was made according to the ongoing classroom's subject matter. Yet, in numerous cases, teachers complained that they have to rotate the program and share it with other schoolteachers. On a few occasions, teachers allowed students to pick certain CDs, however, for the most part, all students use the same CD in the same week.

“I try to be consistent and get them into a routine where they are going out every Friday, and they are coming back every Friday.”

Several teachers noted that they received valuable training during a special meeting time with a Lightspan company representative. As a result, their confidence and their ability to manage the program improved. Others noted that they acquired experience using the program in a previous year, in which case they felt self-assured with their comprehension of the activities. A few teachers assigned specific homework to be completed with the weekly CD. Some did not assign any additional assignments, while others encouraged their students to use the corresponding worksheets. While the teachers noted that they are pleased with the children's use of the software at home as well as with the positive outcomes, the level and intensity of utilization at home was not clear to them.

“I basically just introduce the CD for them to do at home, and they are free to... Sometimes I tell them certain games or activities, and certain ones not to play, only because I might not have taught the skill in class.”

“I tell them that they should be using it every night. . . . It's kind of unfortunate that you really can't, you don't know how much they are using it.”

In the case where children have been instructed to complete the corresponding worksheets, parents were usually asked to monitor and sign their children's assignment book. Teachers described also how they prepare their students in class before the home activity. It was indicated that the activities were strongly aligned with the curriculum. In addition, children and their parents gained familiarity with the general concept of the program through an educational introduction conducted on a special "family orientation day."

Teachers noted that in general parents recognized the effectiveness of the program in enhancing schoolwork and in promoting the child's home assignments. In a few cases, parents have expressed reservations regarding the highly entertaining value of the home activities.

It was understood that their concerns were based on the notion that fun games are less educational ("no pain no gain"). Most of these parents, as they became more familiar with the activities, came to realize that in fact the opposite is true. Their children seemed immersed in the educational game-like activities that worked to promote their school education.

TOPIC 3: TEACHER REPORTS OF STUDENTS’ AND PARENTS’ FEEDBACK AND UNDERSTANDING OF THE LIGHTSPAN PROGRAM

- Teachers reported that their students found the software to be enthusiastically engaging, including both the educational activities in school and in the home. Most of the CDs challenged the students and encouraged exploration of the subject matter through game-like activities.
- Teachers reported that parents appreciated the program, and in many cases got involved with their child's activities.

The overall phenomena according to the teachers was that students favored the Lightspan software because of its recreational element. Teachers said the children were thrilled when they received a new CD, as well as excited and immersed in using the software at school. The children, according to their teachers, although engaging in play-like activities, understood that their experiences were purposeful. In other words, the children realized that their playtime is essentially education-oriented and is basically an extension of their classroom work -- they were able to distinguish between unstructured free-play and purposeful games. Teachers said that some parents indicated that their children were generally very happy to engage with the activities on the first days of the week, but thereafter lost interest.

Teachers noted that students were inspired to attempt challenges on the school computers, and if the computers malfunctioned they were upset. Also, in relation to this topic, children were proud of their progress with the program, as it was evident through their experience sharing with their peers. Parents confirmed the teachers’ assessment noting that their children “*are doing more, [and] getting more involved.*” However, one teacher noted that in a recent parent conference, one parent expressed mixed assessments of the program.

"I've gotten some positive and some negative feedback. It is usually goes to one extreme or the other."

However, the teacher said that most parent comments were fairly positive.

"They like the time they are getting to spend with their child. Interacting where they both can sit there and play together."

"The feedback I get is that they [parents] just all think it's wonderful and beneficial."

They think it is great, one teacher described: "They can't believe it's educational."

The students "love" it. "They can't wait to get their next CD. I think it is cool because they don't realize that they are learning playing these CDs."

Students expressed requests to use the program on a constant basis. As one teacher depicted in an exemplifying comment from a student: “Well I like doing this, how come we can’t do it at home anymore?”

The parents value the program especially because it gives them an opportunity to work with their children. "The parents really liked it. They... Well, they could get on and work with the kids. Especially the parents of the kids that don't have computers at home. So this gave them a chance... And I've had some parents come back and say 'Okay, we really liked it and we got him a Playstation for Christmas, and can we still borrow some disks?'"

TOPIC 4: TEACHER'S EVALUATION OF THE LIGHTSPAN PROGRAM

- The program was favored by teachers because of its usefulness and relevancy to the classroom curriculum.
- The program encouraged educational activities through independent exploration, games, and play.

The majority of teachers (as noted before) expressed high appreciation for the program in terms of its usefulness (i.e. enhancing the curriculum and encouraging the learning experiences at home including parents' involvement), and its means of engaging students with the subject matter. The teachers articulated clearly their role in the introduction and the implementation of the different activities. They also emphasized the capacity of the program to challenge their students in curriculum related topics through a variety of playful activities.

"It has a lot to do with what we're learning in the classroom. So they are getting it here at school . . . and then they play the games at home they are getting it too. So it's a home and school activity."

"They [the children] don't realize they're learning. . . they think they are playing a game . . . anything on Sony Playstation to them is just a game."

"The Playstation and the CD initiate their own learning rather than waiting for an adult to intervene."

TOPIC 5: TEACHER'S PREPARATION AND FAMILIARITY WITH THE LIGHTSPAN PROGRAM

- The usefulness and success of the program seemed to be related to the teacher's understanding of the program and their level of experience with the software. Most teachers conveyed a good sense of their familiarity with the software, and effective results on the students' learning.

Most of the teachers noted that the specific training they received was invaluable, and that it helped them to constructively manage the program in their classrooms. The teachers who indicated being uncomfortable with the program at the beginning, also noted that they became more confident as they gained more understanding of the program and as they recognized the positive results in their students' learning. One teacher said that she was well prepared and that she feels very comfortable with the program.

"It's a wonderful program. You know, the results that we got just in half of the year [when] used it last year . . . were just outstanding. Can't wait to see what it's going to be like this year, because we've actually implemented it the whole entire year. And I just think it's so beneficial. It's not something that I'd take away."

Another teacher noted: "I felt like I had to go home and [practice] because you have [to] really play the games . . . I feel a lot more comfortable, but still not hundred percent."

TOPIC 6: TEACHER'S PLAN OF FUTURE USE OF THE LIGHTSPAN PROJECT

➤ Teachers stated that the program is highly practical in promoting technology understanding and felt it is advantageous to use as an integral part of the school educational agenda.

All teachers recognized the program's capacity to enhance their students' learning. The general attitude was in favor of using the program in the future, as one teacher expressed: *"I'm pleased. I definitely am glad I'm doing it."* The teachers noted that the program accommodated the topics learned in the classroom and enhanced preferred habits of learning, including concentration and completion of an assignment, independent exploration, focusing on the learned subject matter, and using technology, computers, and the Internet.

As one teacher expressed her intention to use the program in the future with the classroom material. "Tie the two together and let it be a natural... it would be a good educational practice."

Another teacher noted that the program is highly beneficial -- "I'd like to continue with the partnership."

TEACHER INTERVIEW CONCLUSIONS

The majority of teachers expressed high appreciation for the program in terms of its usefulness (i.e. enhancing the curriculum and furthering the learning experiences at home) and its means to engage their students in the subject matter. Teachers also articulated clearly their role in the introduction and the implementation of the different activities. In summary, teachers perceptions of the program indicated that:

- ☑ The Lightspan program is highly relevant to the schools' curricula. The CDs were found to be aligned and effective in promoting the classrooms' educational agenda.
- ☑ The software has a positive impact on children's motivation to engage with educational material through play-oriented activities and independent exploration.

APPENDIX A

SAMPLE INSTRUMENTS



**DELAWARE CHALLENGE GRANT PROJECT:
CLASSROOM USAGE LOG 1999-2000**

Teacher Name:	Week Ending on Friday:
<input type="text" value="SELECT YOUR NAME AND SCHOOL"/>	<input type="text" value="SELECT A WEEK"/>

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
HOW MANY MINUTES DID YOU USE THE LIGHTSPAN CDS?	<input type="text"/>				
WHO USED THE CDS? (select all that apply)	<input type="checkbox"/> Whole Class Activity				
	<input type="checkbox"/> Small Group or Individual Activity				
HOW WERE THE CDS USED? (select all that apply)	<input type="checkbox"/> Integral Part of Unit				
	<input type="checkbox"/> Reinforcement or Enrichment				
WHAT KIND OF CD WAS USED? (select all that apply)	<input type="checkbox"/> Mathematics				
	<input type="checkbox"/> Reading				
	<input type="checkbox"/> Writing				

	<input type="checkbox"/> Other				
HOW MANY MINUTES DID YOU USE THE LIGHTSPAN NETWORK?	<input type="checkbox"/>				

To record this Classroom Log in the database, press .

To reset all fields on the form without submitting the log, press .



Last modification date: 09/25/99
 For comments, suggestions, or additional information, please ud-rdc@udel.edu
 Copyright © 1999 Delaware Education Research & Development Center

STUDENT USAGE LOG

Student Name: _____

Teacher Name: _____



CHALLENGE GRANT/LIGHTSPAN STUDENT USAGE LOG

OCTOBER 2 - OCTOBER 8, 1998

Directions: Check or circle your answer to each question.

	How long did you use the playstation?	Who used the programs with you?	What programs did you use?
Friday	Less than 15 minutes	☺ Just me	Lightspan software from school
	About 15 minutes	☺☺ Me and my brother/sister	A game that I rented
	About 1/2 hour	☺☺ Me and my parent(s)	A game that I bought
	About 1 hour	☺☺ Me and a friend	Other: _____
	More than 1 hour	☺☺ Me and _____	
Saturday	Less than 15 minutes	☺ Just me	Lightspan software from school
	About 15 minutes	☺☺ Me and my brother/sister	A game that I rented
	About 1/2 hour	☺☺ Me and my parent(s)	A game that I bought
	About 1 hour	☺☺ Me and a friend	Other: _____
	More than 1 hour	☺☺ Me and _____	
Sunday	Less than 15 minutes	☺ Just me	Lightspan software from school
	About 15 minutes	☺☺ Me and my brother/sister	A game that I rented
	About 1/2 hour	☺☺ Me and my parent(s)	A game that I bought
	About 1 hour	☺☺ Me and a friend	Other: _____
	More than 1 hour	☺☺ Me and _____	

More on back ⇨⇨⇨⇨

Monday	Less than 15 minutes	☺ Just me	Lightspan software from school
	About 15 minutes	☺☺ Me and my brother/sister	A game that I rented
	About 1/2 hour	☺☺ Me and my parent(s)	A game that I bought
	About 1 hour	☺☺ Me and a friend	Other: _____
	More than 1 hour	☺☺ Me and _____	
Tuesday	Less than 15 minutes	☺ Just me	Lightspan software from school
	About 15 minutes	☺☺ Me and my brother/sister	A game that I rented
	About 1/2 hour	☺☺ Me and my parent(s)	A game that I bought
	About 1 hour	☺☺ Me and a friend	Other: _____
	More than 1 hour	☺☺ Me and _____	
Wednesday	Less than 15 minutes	☺ Just me	Lightspan software from school
	About 15 minutes	☺☺ Me and my brother/sister	A game that I rented
	About 1/2 hour	☺☺ Me and my parent(s)	A game that I bought
	About 1 hour	☺☺ Me and a friend	Other: _____
	More than 1 hour	☺☺ Me and _____	
Thursday	Less than 15 minutes	☺ Just me	Lightspan software from school
	About 15 minutes	☺☺ Me and my brother/sister	A game that I rented
	About 1/2 hour	☺☺ Me and my parent(s)	A game that I bought
	About 1 hour	☺☺ Me and a friend	Other
	More than 1 hour	☺☺ Me and _____	

Remember to give your log to your teacher on Friday!!



**CHALLENGE GRANT TECHNOLOGY PROJECT
STUDENT SURVEY –MAY 2000**

This is a survey about the Lightspan project. Circle your answers to each question. Thank you for completing this survey! ☺

What grade are you in? K 1 2 3 4 5 6
 Are you a: Boy or Girl

DO YOU AGREE WITH THESE SENTENCES?

1. Using the computer is scary.	Yes	Sometimes	No
2. The programs are fun to use.	Yes	Sometimes	No
3. I like having the programs at home to use.	Yes	Sometimes	No
4. At home, I would rather use these programs than watch TV.	Yes	Sometimes	No
5. These programs are too hard for me to do.	Yes	Sometimes	No
6. I like it when my teacher shows the programs to the class.	Yes	Sometimes	No
7. I like it when I get to use the programs at school.	Yes	Sometimes	No
8. When I use the computer at school, I work with a buddy or two.	Yes	Sometimes	No
9. I get to help choose what we work on with the computer.	Yes	Sometimes	No
10. At home, a grown-up and I work together on the computer.	Yes	Sometimes	No
If yes, who: _____			

ARE THESE SENTENCES MOSTLY TRUE OR MOSTLY FALSE ABOUT YOU?

11. You like school.	Mostly True	Mostly False
12. Most of the time, you don't want to go to school.	Mostly True	Mostly False
13. You are usually happy when you are in school	Mostly True	Mostly False
14. You always try your best at school.	Mostly True	Mostly False
15. You always do your homework.	Mostly True	Mostly False
16. You like your teacher.	Mostly True	Mostly False

THANK YOU!! ☺

**CHALLENGE GRANT TECHNOLOGY/LIGHTSPAN PROJECT
SCHOOL STAFF SURVEY
MAY 2000**

Please respond to this survey based on your own experiences with the Challenge Grant/Lightspan Project. Responses will be treated confidentially and no individual will be identified in any report of the data. Do not write your name on this survey. If you want to clarify your answers, please write your comments in the left margin. Thank you!

Using the scale below, please indicate your level of agreement or disagreement with each of the statements listed by checking the appropriate box. Mark only one box for each item.

	Strongly Agree			Strongly Disagree
1. The training I received for this project was high quality.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I received information on how to get additional help if problems developed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Any problems I experienced with this project were resolved in a timely manner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I feel confident using the Lightspan programs in my classroom.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The equipment was difficult for me to set-up.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I feel comfortable using computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. The Lightspan programs are user-friendly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. The Lightspan programs are easy for my students to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. My students enjoy using the Lightspan programs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. The Lightspan programs help my students learn new things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. The Lightspan programs are great learning tools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. The Lightspan programs are age-appropriate for my class.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. This project has been a positive experience for me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. This project was implemented smoothly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CONTINUED ON BACK

JUST A FEW MORE QUESTIONS . . .

1. How long have you been involved with the Lightspan project?

- More than 3 years About three years About two years About one year Less than 6 months
 I am not involved with the Lightspan project.

2. How involved have you been with the Lightspan project?

- Very involved Moderately involved A little involved Not involved at all

3. How satisfied are you with the Lightspan project?

- Very Satisfied Satisfied Not Satisfied Very Dissatisfied

4. Do you decide which Lightspan CD to send home with your students OR is the home distribution handled centrally?

- I choose the CDs AND send them home with my students.
 I choose the CDs BUT someone else handles the distribution.
 Someone else chooses the CDs BUT I send them home with my students.
 Someone else chooses the CDs AND someone else handles the distribution.
 I don't know how this is done.

5. How do you usually use the Lightspan software in your classroom (e.g., as a Center, in whole-class instruction, as a small group activity, as an individual activity, etc)?

6. What do you personally think of the Lightspan project?

7. What kind of feedback have you heard from parents about the Lightspan project? Please provide any specific examples you might have where parents have indicated their thoughts to you regarding the project.

8. Do you think you will continue to use the Lightspan software once the “project” is over? What would help you to continue using the software?

CHALLENGE GRANT EVALUATION – TEACHER INTERVIEW PROTOCOL

1. How long has your school been involved with the Lightspan project?

PROBE: How long have you personally been involved with the Lightspan project?

2. One of the major goals of the Lightspan project is to extend the learning day through this home-school connection. To what extent do you think this goal has been met in your classroom?

PROBE: Have you seen any evidence that student's are spending more time on educational activities outside of the classroom? Do you think this change is related to the Lightspan project?

3. How do you manage the student's use of the Lightspan Playstation software?

PROBE: Do you decide which CDs to send home with students? If so, how do you determine? If not, do the students ask for a new CD when they are ready?

Do all students take home the same CD at the same time? How often do you collect the CDs and distribute a new one?

Do you assign the students specific homework with the CDs? If so, how? If not, do the students work on the CDs as they want to (i.e., not necessarily tied in to the classroom activities)?

4. What kind of feedback have you heard from students or parents about the Lightspan software?

PROBE: Do the students think it is fun? Do you think they understand they are doing an educational activity?

Do the students think it is too easy? Do they get bored with it?

Do the students talk about the CDs among themselves, i.e., comparing where they are with the CDs? Do the students seem proud when they finish a CD?

Do you think the parents understand it is an educational activity? Have any parents complained that they think it is a waste of time (i.e., that their child is just playing)?

5. What do you personally think of the Lightspan project?

PROBE: Do you think the Lightspan project has been a worthwhile use of your and your students' time? Why or why not?

Do you think the Lightspan software is challenging? Why or why not?

Does the Lightspan software "fit" well within your curriculum or are is it more of a burden to try to find a time where it seems appropriate to use it?

Do you think the student's learn from the CDs? Do you think they learn more from using the CDs in the classroom or at home? Why do you think so?

Are there components of the Lightspan project that you think are really good? If so, what? Are there components that needs some more work? If so, what?

6. How well prepared did you feel to help your students with the Playstation software?

PROBE: Were you provided with training about the Lightspan project? What did you think about this training?

Do you feel like you have a good understanding of the Lightspan project and how to use the software in the classroom?

What could be done to help you feel more comfortable with the project/software?

7. Do you think you will continue with the Lightspan software once the "project" is over?

PROBE: Will you continue with the classroom component, home component, or both? Why?

8. With which aspects of this project do you feel that your school has had particularly good success?

PROBE: What have you found that has worked really well for your school?

9. What were the challenges that your school has faced while implementing the Challenge Grant project?

PROBES: Which of them were you able to successfully resolve?

How did your school resolve these challenges?

Which ones weren't you able to successfully resolve?

Ideally, what would it have taken to resolve it (them)?

10. How would you describe the level of commitment of your teachers regarding this program?

PROBES: Does the level of commitment differ by grade level? Content level? Experience?

What makes you think that?

What do you think has lead to their level of commitment? or lack thereof?

11. How would you describe the level of commitment of parents regarding this program?

PROBES: What makes you think that?

What do you think has lead to their level of commitment? or lack thereof?

12. How would you describe the level of commitment by school and district administration?

PROBES: What makes you say that?

Do you think their commitment to the project is important for its success?

13. What do you feel has been the greatest benefit of being a participating school in this project?

CHALLENGE GRANT PROJECT

PARENT SURVEY SPRING/SUMMER 2000

“Good afternoon (morning, evening). I am (interviewer’s name), calling for Delaware Education Research & Development Center at the University of Delaware. We are conducting a survey to find out how parents feel about the Delaware Challenge Grant - Lightspan Program. Our survey should take 10-15 minutes.”

“Our study requires that we speak with a parent or guardian of the child who is participating in this project. Are you one of the parents of this child?”

If “yes”, “Then you are the person I need to speak with.” Go to section A.

If “no,” “May I speak with him or her?” Repeat introduction at top of page.

Section A

“First, I’d like to ask you a few questions about you and your child’s participation in this project.”

What elementary school does your child attend? (Record School Name and Number)

1. *Did your son or daughter receive a Sony Playstation to use at home as part of this project?*

A= yes B= no

2. *If “no,” did your son or daughter receive a Multimedia computer to use at home as part of this project?*

A= yes B= no

If parent responds “no” to both questions 1 and 2, please thank them for their time and end the call.

3. *Approximately how long did your son or daughter have possession of the Sony Playstation (or Multimedia Computer)?*

A=Less than 1 week

B=Between 1-3 weeks

C=Between 4-6 weeks

D=Between 7-10 weeks

E=More than 10 weeks

4. *How frequently did your child work independently using the Lightspan CDs?*

A= Always

B= Most of the time

C= About half of the time

D= Seldom

E= Never

Section A (continued)

5. *How frequently did your child work with you (or other adults in your household) using the Lightspan CDs?*

A= Always

B= Most of the time

C= About half of the time

D= Seldom

E= Never

6. *Did you attend a parent training session at your child's school prior to receiving the Sony Playstation?*

A= yes

B= no

7. *Did any other adults in your household attend a parent training session at your child's school prior to receiving the Sony Playstation?*

A= yes

B= no

8. *If "yes," could you tell me the relationship of this (these) adult(s) to the child?*

A=father

B=mother

C=grandparent

D=aunt or uncle

E=brother or sister

Section B

"Now, I'd like to ask you a few questions about your opinion of this project. Please indicate your level of agreement or disagreement with each of the following statements on a scale of 1 to 4, where 1 is strongly disagree and 4 is strongly agree."

1=strongly disagree

2=disagree

3=agree

4=strongly

agree

5=don't know

9. The training session I attended was informative.

10. I received information on how to get additional help if problems developed.

11. Any problems I experienced related to this project were resolved in a timely manner.

12. At the end of the training session, I felt confident that I could set-up and use the equipment in my home.

13. The equipment was difficult for me to set-up at home.

14. The Lightspan CDs are great learning tools for my child.

15. The Lightspan CDs are too easy my child.

16. The Lightspan CDs help my child to learn new things.

Section B (continued)

17. My child enjoys using the Lightspan CDs.
18. The Lightspan CDs are too difficult for my child.
19. My child usually works independently using the Lightspan CDs.
20. My child and I use the Lightspan CDs together.
21. This project has been a positive experience for my child.

Section C

“Now, I would like to ask you a few questions about the amount of time devoted to specific activities that your child participates in has changed. ”

22. Has the amount of time that your child spends watching television or videos increased, stayed about the same, or decreased since involvement with this project?

A = Increased
B = Stayed the same
C = Decreased

23. Has the amount of time that your child spends doing school work increased, stayed about the same, or decreased since involvement with this project?

A = Increased
B = Stayed the same
C = Decreased

24. Has the amount of time that your child spends having playtime increased, stayed about the same, or decreased since involvement with this project?

A = Increased
B = Stayed the same
C = Decreased

25. Has the amount of time that your child spends participating in activities with the family increased, stayed about the same, or decreased since involvement with this project?

A = Increased
B = Stayed the same
C = Decreased

Section D

“These last few questions ask for your thoughts on the project as a whole.”

26. In your opinion, what are the strengths or benefits of being a part of this project?

27. In your opinion, what are the weaknesses or drawbacks of being a part of this project?

28. If you could make one recommendation to improve this project, what would it be?

Thank you very much for your time!

APPENDIX B

EVALUATION PLAN

DELAWARE CHALLENGE GRANT -- EVALUATION PLAN

Outcome Areas	Definition of Outcome	Indicator or Measure	Source of Data	Timeline	Responsibility
<p>STUDENT ACHIEVEMENT</p> <p><u>Questions:</u></p> <p>Is there an increase in student achievement for students in this program?</p>	<p>Student Achievement in Reading and Mathematics</p>	<p>Stanford 9 Reading and Mathematics (Grades 1 and 2);</p> <p>Delaware State Testing Program (Grade 3)</p>	<p>Students</p>	<p>Academic Years 3-5 (beginning Fall 1997)</p> <p>Grades 1 and 2: Fall and Spring testing</p> <p>Grade 3: Spring testing</p>	<p>Students will complete tests; Data provided by Harcourt-Brace and Delaware Department of Education; Analysis and Reporting by the Delaware Education R&D Center</p>
<p>PROGRAM USAGE</p> <p><u>Questions:</u></p> <p>What does the usage look like in the classroom?</p> <p>What does the usage look like in the home?</p>	<p>Frequency and type of use</p> <p>Frequency and type of use</p>	<p>Weekly classroom usage logs</p> <p>Monthly home usage logs</p>	<p>Teachers</p> <p>Parents</p>	<p>Academic Years 1-5 (beginning Spring 1996)</p> <p>Academic Years 1-5 (beginning Spring 1996)</p>	<p>Data compiled by the classroom teacher and submitted through the World Wide Web; Analysis and Reporting by the Delaware Education R&D Center</p> <p>Data compiled by the classroom parent and submitted on paper through the teacher; Analysis and Reporting by the Delaware Education R&D Center</p>

Outcome Areas	Definition of Outcome	Indicator or Measure	Source of Data	Timeline	Responsibility
<p>PROGRAM SATISFACTION</p> <p><u>Questions:</u></p> <p>What do teachers think about this project?</p> <p>What do teachers think about the training they received?</p> <p>What do parents think about this project?</p> <p>What do parents think about the training they received?</p> <p>What do students think about this project?</p>		<p>Interviews and focus groups; Staff survey</p> <p>Professional Development survey</p> <p>Interviews</p> <p>Training surveys</p> <p>Student survey</p>	<p>Teachers/School Staff</p> <p>Teachers</p> <p>Parents</p> <p>Parents</p> <p>Student</p>	<p>Academic Years 2-5 (beginning Fall 1996)</p> <p>Academic Years 2-5 (beginning Fall 1996)</p> <p>Academic Years 2-5 (beginning Fall 1996)</p>	<p>Interviews conducted by members of the R&D Center; staff survey sent directly to teacher; professional development survey administered by the trainer; Analysis and Reporting by the Delaware Education R&D Center</p> <p>Interviews conducted by members of the R&D Center; survey administered by the trainer; Analysis and Reporting by the Delaware Education R&D Center</p> <p>Survey administered by the classroom teacher; Analysis and Reporting by the Delaware Education R&D Center</p>
<p>DEMOGRAPHICS</p> <p><u>Question:</u></p> <p>What are the demographic characteristics of schools and students in the program?</p>					