A TEACHER IN THE LIVING ROOM?

EDUCATIONAL MEDIA FOR BABIES, TODDLERS AND PRESCHOOLERS

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THE HENRY J. KAISER FAMILY FOUNDATION

A BACKGROUND REPORT PREPARED FOR THE KAISER FAMILY FOUNDATION
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INTRODUCTION

Recent years have seen an explosion in the development of media products for babies, toddlers, and preschoolers. From baby videos like Baby Einstein to computer programs like JumpStart Baby, and from toddler-friendly video game consoles like the V.Smile to interactive DVD systems like InteracTV and handheld game systems like the Leapster, there are a plethora of new media platforms and products specifically designed for very young children.

The growth in this market comes despite the concerns of some in the medical community. The American Academy of Pediatrics recommends no screen time for babies under age two, and no more than 1-2 hours a day of high quality educational screen media for children ages two years and older.[1] The rationale behind the Academy's recommendations is that early childhood – particularly the first 24 months of life – is a critical time for the development of children's brains. The types of activities the baby engages in and the stimuli provided in the baby's environment are thought to be critical elements in that process.

Others argue that it is precisely because of the importance of this period in children's development that media can be such a useful educational tool. These experts believe that children may learn effectively from entertaining, video-based tools, and that the interactivity inherent in many of the new media products adds to their power to teach specific skills and stimulate cognitive development.[2]

Recent research indicates that many children are falling outside the pediatricians' recommendations (particularly regarding babies under 2), and that screen media other than TV are occupying an increasing amount of time in children's lives.[3] On average, babies 6 months to 3 years old spend an hour (1:01) a day watching TV and 47 minutes a day using other screen media (computers, videos, and video games). Four-to-six year-olds spend an average of just over an hour (1:10) a day watching TV, and a similar amount of time (1:02) using the other screen media.[4]

While the pediatricians suggest that screen media use for children over age two be limited to high quality educational media, what hasn't been addressed is how parents are supposed to know what constitutes a high quality, educational product. There are no government standards, no official definition of "educational" to indicate which media products are or are not educational, let alone "high quality." The resources parents *do* have in making these decisions are their own personal experiences, recommendations from other parents or websites, and the advertising and packaging of the products.

The purpose of this report is to look at electronic media products for very young children – including babies, toddlers, and preschoolers – that are marketed to parents as educational. The report is *not* designed to assess the quality or effectiveness of any specific products. Rather, it is intended to:

- Examine how frequently educational claims are made in the marketing and advertising of these products;
- Explore the types of claims that are made for these products in the advertising and packaging; and
- Investigate the degree to which these claims have been scientifically validated through research on children's learning outcomes.

Three types of electronic multimedia are examined: videos and DVDs; computer software; and video games. The latter category includes the relatively new genre of video game systems developed especially for young children, such as the V.Smile, as well as other screen-based interactive multimedia products, such as the Leapster handheld or the Read With Me DVD system. Products that lack a screen, such as electronic books, were not considered in this report. The research focuses exclusively on commercially-produced products for the home market.

METHODOLOGY

The following steps were taken to examine the educational media market and prepare this report:

1. Best-seller lists on Amazon.com were reviewed (as of June 20, 2005) for DVDs and computer software for children ages 0-6 years; an equivalent list was not available for the products that are grouped together in this report as video games. Retail availability of DVDs, computer software, and video games in Toys*R*Us, Best Buy, Target, and Costco was also assessed. In each case, researchers noted the total proportion that made educational claims as well as the types of educational claims made.

2. Twenty-nine different media products were purchased and examined, including 11 video/DVDs, 8 computer software packages (several of which were collections of more than one program), and 14 video games (at least two each on four different gaming systems: the V.Smile, the Leapster, InteracTV, and the Read With Me DVD system). The products chosen were considered to be representative of the educational electronic media products on the market, in terms of age ranges, educational claims, presentation styles, parent company, and use of licensed characters. Selection was weighted toward best-selling products.

The purpose of these reviews was not to assess the quality or developmental appropriateness of the content or style, but rather to explore two basic areas:

- The types and specificity of educational claims made on packaging, on package inserts (including instructions), on product websites, or by company spokespeople in the media; and

- Whether guidelines were given to parents in the instructions, either in print or in the media, about how to maximize the educational benefit of the product. For example, do the instructions suggest using the product as a parent-child activity?

Specific results for each of the 29 products can be found in Appendix A. Descriptions of the various types of educational content are in Appendix B.

❸ A systematic review of research literature was also conducted, searching for any published studies on commercially available in-home educational media products for children ages 0-6 years. The purpose was to determine what has been scientifically shown with respect to media usage and cognitive development in young children. Searches of several bibliographic databases were performed, including Communication Abstracts, ERIC, PsycInfo, and Medline. Cited references from relevant studies, book chapters, and review articles were also examined to uncover any additional studies. Studies were included if they:

- Involved children within our target age group, infancy to six years.
- Looked at outcomes associated with the use of a commercially available electronic media product designed for in-home use.
- Examined learning or cognitive outcomes.
- Utilized a comparison group so that researchers could assess differences in outcome with and without the product.

Examples of excluded studies are those that involved only older children, used a product that was designed solely for the study or for use in an academic setting, or focused exclusively on behavioral outcomes.

❹ Finally, in order to develop better understanding of the process used in developing these products, and to determine whether the leading developers had conducted their own unpublished outcomes research, interviews were conducted with representatives from nine companies. The companies selected for interviews include the top three developers of each type of media product discussed in this report (video/DVDs, computer software, and video games), for each age group (infants, toddlers, and preschoolers).

The top companies were ascertained using Amazon.com's best-seller lists for DVDs and computer software. The companies selected have best-selling products which make educational claims of an academic, cognitive, or school-readiness nature. An equivalent best-seller list was not available for the products grouped together in this report as video games. The top companies were ascertained from reports in business and trade journals as well as from their market presence in retail stores. Because there was considerable overlap in the top companies, and not all companies contacted chose to participate, a total of eleven companies were contacted for interviews, and interviews were conducted with nine companies. A complete list of the interviews can be found in Appendix C.

PRODUCTS EXAMINED FOR THIS REPORT

DVDs:
Baby Shakespeare (Baby Einstein)
Baby Einstein Language Nursery (Baby Einstein)
Baby Superstar: Forest Ranger (IMAGE)
Brainy Baby: Left Brain (Brainy Baby)
Curious Buddies: Let's Go to the Farm (Baby Nick Jr.)
Dora the Explorer: Map Adventure (Nick Jr.)
Elmo's World: Babies, Dogs and More (Sesame Street)
Learning About Letters (Sesame Street)
Letter Factory (LeapFrog)
Math Circus (LeapFrog)
Mickey's Seeing the World: Around the World in 80 Days (Disney)

COMPUTER SOFTWARE:
Adventure Workshop Tots (The Learning Company)
Blue Takes You to School (Atari)
The Boohbah Zone (Brighter Child)
Caillou Magical Adventure (Brighter Child)
Disney Learning Toddler (Disney)
I Spy Junior (Scholastic)
Jumpstart: Advanced Toddler (Knowledge Adventure)
Zooboomafoo Animal Alphabet (Brighter Child)

VIDEO GAMES:
Alphabet Park Adventure (V.Smile)
Care Bears: A Lesson in Caring (V.Smile)
Dora the Explorer (InteracTV)
Dora the Explorer: Wildlife Rescue (Leapster)
Elmo's World (InteracTV)
Elmo's World: Elmo's Big Discoveries (V.Smile)
Learning With Leap (Leapster)
Letters on the Loose (Leapster)
The Little Engine That Could (Read With Me DVD system)
Miss Spider's Tea Party (Read With Me DVD system)
SpongeBob Squarepants (InteracTV)
SpongeBob Squarepants: Krusty Krab Adventures (InteracTV)
The Wiggles: It's Wiggle Time (V.Smile)
Winnie the Pooh: The Honey Hunt (V.Smile)

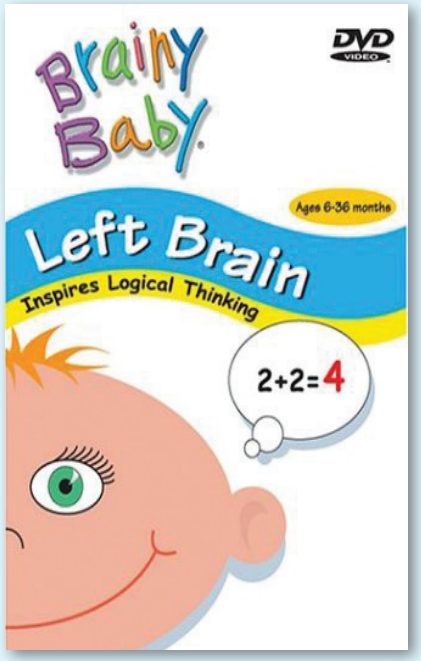
EDUCATIONAL CLAIMS

VIDEOS

Children's videos are a large and growing business in the United States. The children's video and DVD market was estimated at $4.8 billion in 2004 and projected to continue increasing through 2010.[5] The market for "developmental" videos and DVDs produced specifically for infants and toddlers is increasing steadily, with one report estimating that sales had reached $100 million in the United States in 2004.[6] Sales of videos and DVDs specifically targeted toward preschool-aged children reached nearly $500 million in 2004,[7] with many of those titles having associated educational claims. According to one company representative interviewed for this report, the "overall video market for infants and preschoolers has become much more crowded over the past several years due to the influx of licensed character videos and products without educational value (from companies) eager to cash in on the baby-video market."

Judging by the type of videos for sale at both Amazon.com and in retail outlets, the booming market for children's videos is being fueled in large part by the notion that videos can provide an educational benefit, especially for babies.[8] At Amazon.com in June 2005, three-quarters (76) of the 100 top-selling DVDs listed for babies from birth to two years old made educational claims. This market is dominated by Baby Einstein, with 26% of the videos, followed by Nick Jr. (18%), Brainy Baby (12%), and PBS (5%). For children in the pre-school age group (3-6 years old), 23% of top-selling DVDs on Amazon.com made educational claims.

In many cases, the titles alone are enough to communicate to parents that these products promote the cognitive growth of their children. Retail store shelves are lined with videos with titles like *Baby Einstein*, *Brainy Baby*, or *Baby Genius*. But while consumers may see an educational claim implied in those titles, the companies don't always agree. With *Baby Einstein,* for example, the company sees the title as reflecting Einstein's passion for curiosity and discovery.



But beyond the titles, many products include claims about their educational value for children; this is true even for products designed for infants, although the claims made for this age group tend to be more broadly about cognitive development than about specific learning goals. For example, the package of a Baby Einstein video advertised for babies as young as one month old says that it "creates engaging learning opportunities,"[9] while a Nick Jr. video for babies as young as 3 months old says it is "specifically designed for babies' social, emotional, cognitive and physical development,"[10] and the package of another product for a similar age range says it "enhance(s) cognitive development."[11] The Brainy Baby *Left Brain* video, for babies 6 months old and up, features a picture of a baby on the cover with a thought balloon containing the equation "2+2 = 4." The video package says it is "the first video series that can help stimulate cognitive development," and that the video will "teach your child about language and logic, patterns and sequencing, analyzing details and more."

Other video products make more specific claims; this was especially the case among videos aimed at children over two years old. *Mickey's Seeing the World*, for children ages 2 years and up, says it "teaches geographic skills," while LeapFrog's *Letter Factory*, for the same age group, says it "teaches phonics." LeapFrog's *Math Circus*, for children ages 3 years and up, says it "teaches numbers, counting, addition and subtraction." Nick Jr's *Dora the Explorer: Map Adventures* video states that it "promote(s) cognitive growth, problem solving skills and an appreciation of Latino culture." Interestingly, the Sesame Street products examined for this report made fewer specific educational claims, and like the Nick Jr video, did not specify an age range on the product. For example, the *Elmo's World* DVD merely says that "each segment educates and delights viewers young and old."

In interviews, some companies pointed to what they *don't* claim on product packages or in other parent information. For example, a representative from the Brainy Baby Company pointed out that "In no way does the Brainy Baby Company claim that these products will increase IQ. Rather, all Brainy Baby products are designed for parents to use as one of many teaching tools, much the same way they might use a book, game, or toy."

PARENT COMMENTS ON VIDEOS AND DVDs

These parent comments were taken from reviews of videos and DVDs for infants and toddlers, posted on Amazon.com and accessed on September 29, 2005. The names of the specific products being referenced have been removed, as have the parents' names:

"Introduce your baby to shapes and geometric forms, and motion! Show them examples of colors and the mixture of blue and yellow turning green! Gaze into the clouds, and find forms with your infant! In this video you can do all this." Mother from Hohenwald, TN, July 2003

"My nine-month old…watches the screen very intently. It's as if he really understands it and is getting smarter as he watches." May 13, 2003 (no location given)

"The educational component [of this video] makes us feel a little less guilty over TV having anything to do with the education/entertainment of our precious bundle of joy." Parent from Anchorage Alaska, September 2000

"By three years old, if you've provided your child with these worthwhile entertainment videos, baby will be talking and understanding quite a bit." Dad's video list, accessed September 29, 2005

"The point is that there is so much education in this video, as well as interesting images. Some of the images are so interesting they seem to hypnotize." Mother from Hohenwald, TN, July 2003

"[O]ur son hears plenty of Mozart and simple words the natural way. Get this video if nobody around your house has time to actually tell your child what a 'ball' or 'cat' is and you never play the music of Mozart." Parent from Washington, DC, February 2004

"[W]hile junior perhaps will not be an Einstein for watching, he will come away from the experience with more synapses in his brain than had he not watched." September 4, 1999 (no location given)

Research has demonstrated that parent-child interaction improves learning. For example, the American Academy of Pediatrics has written that "research on early brain development shows that babies and toddlers have a critical need for direct interactions with parents and other significant care givers (e.g., childcare providers) for healthy brain growth and the development of appropriate social, emotional and cognitive skills."[12]

Many of the videos and DVDs examined for this report encourage parent-child interaction as a way of enhancing their educational value. Some DVDs included printed inserts with information for parents, and others included multimedia parent guides as a special feature within the DVD itself. A few of the DVDs also had "learning games" for parents and children to play together as one of the bonus features in the disc. The Baby Einstein products feature an interview with the company's founder in which she discusses the benefits of parents and children watching together, and the Nick Jr. *Let's Go to The Farm* DVD has an optional voice-over that notes opportunities for parent-child interactions during viewing. *Mickey's Seeing the World* was one of several DVDs to include a pamphlet for parents with ideas for activities to engage in with their children. On the other hand, most of the DVDs examined for this report also had an option of allowing the disc to be played continuously, looping back to the beginning automatically as soon as it finished – something seemingly designed to facilitate repeated independent viewing rather than parent-child co-viewing.

Some companies noted that the content itself is designed to promote parent-child interaction by appealing to both parents and kids. For example, a spokesperson for Baby Einstein said her company "believes that interaction between parent and child is the most important thing" in early childhood; as a result, the company "incorporates elements such as art, poetry and classical music – that are typically thought of as more adult – and approaches them from a baby's point of view to communicate and expose concepts and themes. By doing this, Baby Einstein is able to create a product that not only appeals to a little one, but parents enjoy them as well." Similarly, Sesame Workshop intentionally adds to their products a second layer of humor aimed at adults and believes that the "beauty of the *Sesame Street* products is that adults enjoy them with the child."

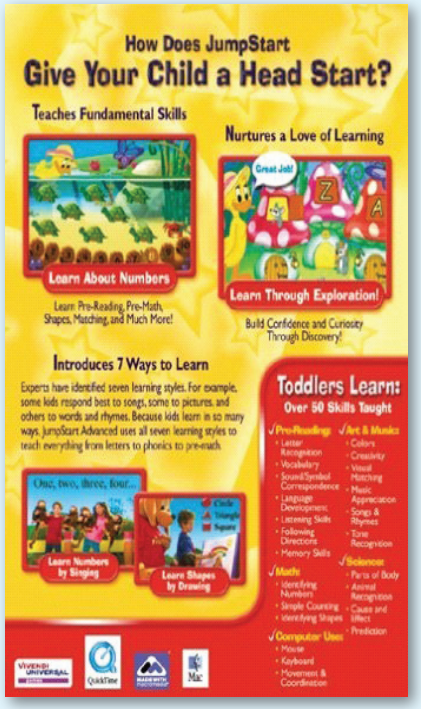
COMPUTER PROGRAMS

Computer software packages for young children are almost all marketed as educational. As of June 2005, at Amazon.com, all 16 of the software titles for children ages 12-24 months made educational claims, as did all of the top-20 best-selling products for 2 year-olds and 17 of the top-20 products for 3-4 year-olds.

Across all of these age groups on Amazon.com, the top-selling educational titles were largely from two main companies: The Learning Company, owned by Riverdeep and featuring the "Reader Rabbit" line as well as several licensed character products; and Knowledge Adventure, previously owned by Vivendi and currently by Knowledge Holdings, and featuring the "Jumpstart" line.

A somewhat different distribution was observed in retail settings, where a smaller proportion of products had educational claims. Those making educational claims predominantly used licensed characters from PBS or Nick Jr. television programming. Most software programs that made educational claims appeared to target both emerging literacy and numeracy skills.

As with the videos, the titles of some software programs reflect the educational bent of the products, like *JumpStart Advanced Toddler* or *Disney Learning Toddler*. Some of the software programs made general educational claims; for example, the *I Spy Jr.* product said it was "brain-building fun," and the *Boobah Zone* program for 2 year-olds and up listed "critical thinking" and "problem solving" as among the skills learned. But by and large, computer software for young children tends to make more detailed educational claims than do videos and DVDs, often listing multiple specific skills that will be taught. For example, the JumpStart software examined for this report (for toddlers 18 months old and older) noted "over 50 skills taught," including letter recognition and counting.



The majority of the computer products examined did not include any parent information other than how to install and operate the software. However, some of the programs had parent notes or instructions within the software itself, and others had suggestions to parents in the marketing copy on the packaging. Several make an effort to encourage parents to interact with their children. For example, the JumpStart program noted that "As a parent you will greatly enhance your child's experience with the software by joining him or her at the computer." And Nickelodeon's *Blue Takes You to School* includes a "parent's area" that suggests a number of related non-computer activities for parents and kids to do together.

VIDEO GAMES

Over the past couple of years, there have been a number of new video games and related multimedia products developed for very young children. The V.Smile is a video game system designed by VTech specifically for preschoolers ages 3 years and up. The Leapster (for children ages 4 years and up) is a handheld screen-based unit used to play games, watch videos, and interact with multimedia books. The new Leapster L-Max system connects the device to the television, using the handheld controller as a video game controller. The InteracTV and Read With Me DVD systems, both from Fisher-Price and for preschoolers ages 3 years and up, use a wireless handheld controller to direct game content embedded within specialized DVDs. The InteracTV system features DVDs based on licensed characters from popular children's television programming, and the Read With Me DVD content stems from well-known picture books published by Scholastic.

Educational claims were made for all of the products we examined in this category. For example, the motto on the V.Smile video game system is "Turn Game Time Into Brain Time." The product is referred to as a "TV Learning System," and the company refers to its game cartridges as "smartridges." Likewise, the packaging on the Leapster product refers to it as an "Educational Game Player," and says it allows a child to "Learn essential school skills" with games that "teach reading, math and critical thinking."

One of the most visible educational claims can be found in the TV ads for the V.Smile video game system. The commercial features a mother nagging her children about playing their V.Smile:

Mom: You'll never get into college if you don't play your video games!
Narrator: Moms are now thinking of video games in a whole new way.
Mom: If you don't play your video games, no dessert!
Narrator: Because of V.Smile, the first educational video gaming system. With V.Smile, your kids will learn letters, numbers, and love learning almost as much as they love playing.
Mom: You can stay up one hour later if you play your video game.
Narrator: V.Smile, the educational video game that turns game time into brain time.
Game: You're a genius!

As with the computer programs, the electronic games tend to include a detailed list of multiple skills taught. Several of the products highlighted the number of skills covered; for example, the *Dora the Explorer* game for the Leapster says it "teaches 45 skills." The longer the list, the more specific the skills tended to be, such as 'number sequencing' and 'directional orientation.'

The InteracTV system uses interactive DVDs adapted from popular children's TV shows such as *Dora the Explorer* and *Sesame Street*. The DVDs have clips from those shows, interspersed with short interactive quizzes during which children can answer questions by pressing the appropriate picture or button on the InteracTV controller. According to the packaging, the system "transforms television into an educational, active and empowering experience." The packaging also lists specific skills taught, including "Divergent Thinking," "Relational Concepts," and "Numbers, Colors, and Counting." The Read With Me DVD system features learning goals focused on early literacy, and is referred to as an "interactive learning system" that "helps build story comprehension and vocabulary."

Each of the systems includes some degree of information for parents. The Read With Me DVD system and the Leapster both include parent guides suggesting parent-child activities to expand on the curriculum in the DVD or the game. On the other hand, the introductory message to parents for the InteracTV system focuses solely on how the system works, pointing out that children can use it independently. The instruction booklet accompanying the V.Smile system includes a message from a child development expert suggesting that parents create a "healthy, balanced TV diet" for their children, by providing a mix of "viewing and interactive experiences [that] can turn a TV screen into an electronic classroom for learning and fun." The booklet goes on to say that "many realistic and caring parents are partnering with television to create electronic classrooms – right in their own living rooms."

PARENT COMMENTS ON COMPUTER AND VIDEO GAMES

These parent comments were taken from reviews of computer software programs and video games for young children, posted on Amazon.com and accessed on September 29, 2005. The names of the specific products being referenced have been removed, as have the parents' names:

"My [two year-old] daughter will play this game for an hour or more at a time! While a video will keep her busy for 30 minutes or so, it's couch potato time, when she's playing this I know she's being challenged and learning and she's talking back and shouting out the answers and not just vegging out!!" Mother from Marietta, GA, September 2004

"My 3 year-old daughter will sit for hours playing with this software. I do not, however, see or hear the results of their accomplishments… I gave it 3 stars because she seems to like to play with it and 1) it is better than TV and 2) I am sure she is learning something." Parent from Houston, TX, November 2004

"I bought this game for my 2 1/2 year-old nephew… In the week since I've had [it], he's basically played it for an hour every day, and cries when I try to protect his little eyes by turning it off sooner." Relative from New York, NY, December 2002

"Our daughter received [this handheld gaming system] for Christmas and has spent hours daily playing with it since. So of course we ran out and bought new games ASAP."
Parent from Bethlehem, PA, January 2004

"Reading to our four year old is very important, and we don't always have the time, so this product enables her to be read to, interact with the story and its characters, and to play games." Parent from New York, NY, September 2005

SCIENTIFIC RESEARCH

As the previous section of this report indicates, many new media products for very young children rely on claims about the educational value of these products as a key part of their marketing and advertising strategies. A recent survey indicates that many parents are convinced that media products are an important part of their children's intellectual growth. Nearly two-thirds (62%) of parents say educational toys like talking books are "very important" to children's intellectual development, with half (49%) deeming educational videos "very important," and 43% saying the same about educational computer games.[13]

From the consumer's perspective, it is difficult to know what a statement like "Learn letter recognition and phonic skills!" on a package really means. Does it simply mean that the product will present an opportunity for the child to learn those skills? Or does it imply that there is evidence that children who use this product will attain those skills more quickly or thoroughly than children who don't use the product?

From a scientific perspective, that last question is the key one, and there are some clear ideas about which kinds of studies provide the most compelling evidence for effectiveness. Two of the more important aspects of a study are the use of comparison groups and the follow-up time of the outcomes measurement. When a study uses comparison groups, learning outcomes are compared between children who used the product and children who did not. In the absence of comparison groups, it is impossible to know whether the child would have experienced the same learning gains even without the product. The ideal situation is the long-term randomized controlled trial: because children are randomly assigned to the test and control groups, there should not be any significant differences between the groups in other factors that might affect the outcome, such as the child's skill levels before the study.

But randomized studies can be more difficult and expensive to conduct. As a result, many researchers use non-randomized comparison groups. In some cases, these are quasi-experimental studies in which children are assigned to groups by the researchers. There are also cohort studies, in which children who are "naturally" exposed to educational electronic media content through the normal course of their lives are compared to those who were not. These studies use statistical methods to try and take into account other factors that might explain any differences between the two groups, such as parent education or income.

In "before and after" studies, children's learning outcomes are compared before and after using the product. The results from these studies can sometimes be challenging to interpret: if the "before" and "after" measurements are some time apart, researchers cannot be sure whether the same gain in skills wouldn't have occurred without the product. And if the "before" and "after" measurements are all in the same day, there are other questions to consider: Did the child simply perform better on the second assessment because he or she had practice with the first one? Will the child still remember the skills or material a few days, or even hours, later? The latter question is an important one for all types of outcomes research in this area. After all, there are many activities for young children that have a significant short-term effect but that show no significant impact a year or two later.

The literature review conducted for this report found no published studies on any of the products examined for this paper, or on any other commercially available in-home educational media products for children in our target age group. That is, there are no published studies on cognitive outcomes from any of the educational videos, computer software programs, or video game systems currently on the market for children ages 0-6 years. However, there are studies published about the impact of educational television on very young children. Since many of the videos and DVDs available for children are based on TV shows, those studies are relevant and are included in this review.

Researchers have had a difficult time creating comparison groups for *Sesame Street* simply because almost all young children watch at least some *Sesame Street*.[14] However, a randomized trial evaluation of *Sesame Street* was successfully conducted during the second year of programming when the researchers conducted the study among communities in which *Sesame Street* was not accessible without cable access. Families with 3-5 year-old children who were randomized into the *Sesame Street* group were given cable access and encouraged to have their children watch *Sesame Street* regularly.[15] Compared to the children in the comparison group, these children made larger gains in literacy and numeracy, with the most significant gains seen in the youngest children. Internationally, randomized trials of *Sesame Street* in other countries have found similar results, including studies in Mexico[16] and Russia.[17]

For most other published outcomes studies of *Sesame Street*, researchers have collected the outcomes data on a sample of children and then divided the children into groups for the analysis based on how

much *Sesame Street* they watched during the study period. The analyses then compare learning outcomes between the different groups.[18] Studies like these have found a range of significant outcomes associated with watching *Sesame Street*, including increased vocabulary, pre-reading skills, pre-math skills, and overall school readiness.[19] These studies statistically controlled for other factors that might have partially explained the results – such as baseline vocabulary, family income, parent education, and language spoken in the home – and still found a significant impact of *Sesame Street* viewing on learning outcomes. Researchers also tested whether the effect observed was due to *Sesame Street* in particular or to watching children's television in general, and found that similar positive learning outcomes were *not* observed in children watching cartoon television shows without a learning focus.[20]

A long-term follow-up report that investigated the children from this study and from one other *Sesame Street* study found that the children who had watched more *Sesame Street* as young children had higher school performance as adolescents, as measured by grades in English, math, science, and overall GPA.[21] Interestingly, there was also one study that specifically looked at the impact of giving families videotaped episodes of *Sesame Street*. However, this study relied on before/after measurements without using a control group, making it difficult to know whether the reported learning gains would have occurred even without the *Sesame Street* exposure.[22]

It should be noted that none of the television studies referenced above concern children under the age of two years. A recent study involving a small sample of infants, followed until they were 30 months old, concluded that some shows aided children's language acquisition, while others did not (but this study did not use a comparison group).[23] A literature review of television watching among children under age two (focused on use of video material created specifically for the experiments, rather than on publicly available content) published in the journal *American Behavioral Scientist* concluded that "[T]he evidence so far indicates a video deficit when it comes to learning. There is less learning from a video display as compared to an equivalent live display… Although the experimental studies are still few, they are remarkably consistent in indicating a video deficit for children 24 months and younger. Although there is some learning indicated by some of the studies, the learning is dramatically less than that found for equivalent live displays."[24]

Some experts believe that it is really the content, rather than the medium, that matters most; others believe there may well be attributes of newer screen-based media – especially interactive technology – that may have effects as well. Possible positive effects include providing structure, improving spatial and iconic skills, and encouraging children to think about their cognitive strategies.[25] A report published by the Society for Research in Child Development concluded that "Little systematic research has been conducted to either legitimize or dispute claims about the impact of interactive media content on children's cognitive and social development."[26]

CORPORATE RESEARCH

While there is a paucity of published research documenting the impact of educational media on very young children, some companies may conduct their own evaluations or assessments. To find out whether or not this is the case, the researchers preparing this report spoke with representatives from nine different companies with best-selling videos, DVDs, computer software, or video game products for infants, toddlers, or preschoolers. (See the Methodology section for a complete explanation of the interview selection criteria, and see Appendix C for a list of all those interviewed.)

Of the nine companies spoken with, only one – Sesame Workshop – was involved in publicly available scientific outcomes research on products similar to those examined in this report. This research (described above) focused on the cognitive effects of the *Sesame Street* TV show for children ages 3 years and up. However, it is possible that companies will collaborate on such studies in the future. Fisher-Price reported having collaborated with university researchers in outcomes research for some of their products but not for their multimedia learning toys. A company representative mentioned that it was possible that comparable research might eventually be conducted with the InteracTV and Read With Me DVD systems, but both were too new to the market to have reached that point. Two of the other companies reported that while they didn't have the resources to conduct outcomes research themselves, they would be open to the idea of similar collaborations with university or non-profit researchers.

On the other hand, despite the lack of published outcomes research, there has been considerable *formative* research on learning-focused, in-home media for young children. These studies concentrate primarily on production needs as opposed to educational outcomes. Production needs include whether the child's attention remained on the screen, or if the child understood the action that was occurring in a particular scene. However, companies sometimes do assess learning outcomes, and in some cases, formative research can even alert companies to potential adverse effects of a product.[27] While such formative research is generally not as experimentally controlled as is outcomes research, it can still provide useful information to a company about what is working and what isn't.[28]

For *Sesame Street*, such formative research has been a key part of the development of television episodes and home video products. In many cases, the research conducted on television episodes of *Sesame Street* applies to the videos as well, since the content and presentation are analogous. According to *Sesame Street* representatives, when new videos are based on more novel concepts or methods, more resources are put into formative research to make sure they will be effective.

Some companies looked at short-term learning outcomes in their formative research and pre-market user testing. Although these studies were not controlled experimental designs, they can provide useful information to the companies.[29] For example, a Nickelodeon executive said that his company does assess short-term learning outcomes in their formative research, but he also acknowledged that real outcomes research needs to have longer follow-up. Similarly, Knowledge Adventure reported doing user testing of JumpStart software with young children in a preschool setting. While the main focus of the testing was usability (looking at how the children would use the software without parent assistance), company representatives say they also made a point of watching and listening for evidence that the content was being absorbed by the children. Fisher-Price conducted similar research, observing children using the products in both its Play Laboratory and in home settings, paying attention to cues indicating the children's levels of understanding. A representative of the LeapFrog company said that for a product like the Leapster, the company identifies the desired learning objectives during the initial stages of development and then conducts efficacy testing with children prior to product release to determine whether those objectives are being reached.

Some companies said one reason they don't conduct outcomes research is that it wouldn't influence sales, and hence doesn't make economic sense. According to one company, parents looking to purchase a product for their child put greater value on the advice of another parent than they do on the words of pediatricians, researchers, or other "experts." In accord with this idea, Fisher-Price found in its marketing studies that parents were more heavily influenced by the experiences of other parents than they were by any expert opinions. As a result, the vast majority of internal research at most companies

focuses on making sure that the product is one that will satisfy parents and children, rather than meeting any scientific standards of proof regarding the educational impact of the product.

Along these lines, Nickelodeon emphasized the importance of providing content that parents consider a "safe" way to occupy their child while they get something done. "You can put them [our videos] in, walk out of the room, and there's nothing bad the kid is going to see," the company representative noted.

Most of the companies say they use methods outside of quantitative, outcomes-based research to gauge the effectiveness of their products. Many companies focused on parent feedback and "fan mail," sales volumes and market shares, and surveys of parents who sent in warranty registration cards. For example, a Brainy Baby representative reported that the company had received "hundreds of testimonials from parents, teachers, and pediatricians... (especially) about the benefits to their autistic or learning disabled children in expanding their vocabulary and comprehension of basic pre-school concepts." This representative also noted that parents have told the company that children "exposed to Brainy Baby as a toddler and preschool learning tool are far more advanced than children who were exposed to some other 'baby learning videos.'"

All of the companies interviewed for this report employ educational or developmental experts either on staff or as consultants. Additionally, at least three of these companies have advisory boards comprised of experts across a variety of education and development-related fields, which typically meet several times a year to review products and suggest new directions.

Some companies report that they draw on research from other fields as they develop their products, including using child development and education research to guide everything from the pace of the material[30] to how "help" screens could be individualized to a given child's learning style.[31] For example, the research behind both the "multiple intelligences" and "multisensory" approaches to learning was used when designing JumpStart, according to that company's representatives. And both Baby Einstein and Brainy Baby reported being influenced by child development research that has shown that infants respond more to reality-based content than to animation or fantasy.

Company representatives point to many attributes of their products that they believe make them useful as educational tools. Video game and software companies both highlighted the advantages of adjustable difficulty levels, and the software companies also mentioned the ways in which their products could be customized to a child's specific learning needs and style. Other companies saw their role as innovating fresh ways of delivering core learning content that would engage children and bring them back again and again for the repetition needed for mastery.

Another issue raised by many of these companies was the perceived value for children of replacing television time with other activities. For example, one game maker noted that "the aim is to take that television time and make it more productive." Another said his company's system helped families make "better use of the television." And a Nickelodeon representative was quick to point out that although video is often seen as a passive medium, Nick Jr tries to make the experience as interactive as possible – with the characters in *Blue's Clues* or *Dora the Explorer* posing questions, and asking the children in the audience to call out the answers.

However, most of the companies spoken with emphasized that their primary research focus had to be on the entertainment value – the fun – of their products. As one executive commented, "It's not a learning toy unless the child wants to play with it." And a Nickelodeon representative pointed out that "if you don't entertain the kid, they're not going to learn anything because they won't be paying attention." A representative from Fisher-Price noted that their "first aim" is to create a product that is fun – learning is seen as a bonus, albeit a valuable one, that can supplement other learning experiences parents and caregivers provide for children. On the other hand, Sesame Workshop gives first priority to creating the curriculum and then develops entertaining content around that curriculum. Their representative said she thought that that approach gave them "an edge" because "we put education first."

CONCLUSION

Parents and educators would like nothing more than an affordable and easy way to make learning fun, to turn play time into education time. Many of the unique properties of media lend themselves not only to making learning fun – like engaging characters, compelling images, and attention-getting sounds – but also, potentially, to making learning more effective. Many child development experts believe that the qualities inherent in some media – such as interactivity, repetition, and the ability to customize content – have tremendous potential as learning tools. Some argue that for children who come from disadvantaged homes, or who lack access to quality child care or preschool, "toys" like educational video games or DVDs could play an especially important role in literacy, numeracy, and overall cognitive development. And certainly many schools already use media-based curricula for older children in the classroom.

But others point out that, as a rule, products for the home market tend to be less strictly curriculum-based than those developed for schools. And while products for the classroom may go through a formal review and approval process, the main tool many parents have to assess the quality of products for in-home use is the product's own marketing and advertising. Many of these home-based products are created for very young children, for use at an age that is critical to children's brain development, but when the effectiveness of media as an educational tool is, at this point, unproven. In fact, preliminary research indicates that the various media may be less effective in educating very young children than are the other activities that they may well be displacing – such as one-on-one parental interaction.

Still others – including many parents – feel that even if a particular product may not necessarily teach a baby the alphabet, it could still be a convenient, harmless, and inexpensive activity that is safer and more engaging than regular television programming or more traditional toys. As one journalist and mother wrote in a recent article about baby videos in *Business Week* magazine, "Who cares if researchers dispute the notion that such exposure enhances a baby's mind? It could keep him quiet long enough for me to take a much-needed shower."[32]

Yet there are also those who worry that, in addition to the lack of evidence about educational benefits, some of these early childhood electronic media products may

actually have adverse effects on child development. Some of these concerns are related to the ways in which screen time in early childhood may directly affect a child's attention span and response to stimulation. Others focus more on the degree to which the use of such products may displace other activities with proven developmental benefits, such as physical activity, imaginative play, reading or interacting with adults.

These critics argue that instead of replacing TV time with more beneficial interactive media, these products may be *creating* media use where there previously was none. And there are also concerns that starting children on a diet of video games, DVDs, and computer games may be more likely to condition them for increased media use throughout their lives than to lead to higher academic achievement.

As the in-home educational media market continues to grow, some advocates say it is hard to escape the idea that many companies' marketing strategies are playing on parents' competitive anxieties. On the other hand, in interviews for this report, several companies argued that they were responding to parents' concerns rather than exacerbating or taking advantage of them. As academic expectations at preschool and kindergarten levels increase, they say, parent anxiety levels are rising, and the companies are trying to address those concerns with products that contain explicit learning content previously reserved for older children. In some cases, company representatives say they are specifically targeting their marketing to parents who want their child to have every advantage in preparing to meet the increased academic demands of today's preschool and kindergarten environments. Other companies say they direct their efforts toward parents who worry that they lack the skills or knowledge to adequately prepare their young children for school. Several of the companies interviewed for this report pointed out that when it comes to determining the impact of these media on children, it is ultimately the responsibility of parents to decide whether and how their children use media.

To the extent that educational claims spur sales in a competitive and lucrative market, they are likely to continue, and perhaps even to grow in scope. **In this environment, advocates have made several recommendations, which are summarized below:**

- **Vastly increase research on the impact of educational media products on very young children.** To date there is remarkably little data regarding how learning-oriented electronic media products are used in the daily lives of young children, let alone whether they have a positive, negative, or neutral effect on their young users. In particular, child development experts argue that we need a much better understanding of media's impact on brain development, future media use, and displacement of other activities. And educators want to see scientific outcomes research that uses comparison groups so they can make accurate assessments of whether media teaches children more or less effectively than other alternatives.[33]

- **Create an independent, non-profit review service that would make professional assessments of educational media products available to parents free of charge.** To date, there is limited information available on websites, but it is not always transparent either who has funded the product reviews, or what the educational or developmental qualifications are of the reviewers. Proponents argue that a comprehensive review site using independent child development experts could bring parents information that they would know is objective and free of marketing.[34]

- **Consider creating clearer standards for products marketed to parents as educational.** Some advocates argue that products clearly designed and marketed as educational can and should be held to a different standard than those that make no such claims. After all, they point out, while there is no gold standard for having fun, there *are* metrics of cognitive achievement, and real or implied claims to this effect may warrant some justification. And unlike the detailed guidelines that have been issued by the Federal Trade Commission for advertising and labeling of products such as household furniture, dietary supplements, cashmere, and down pillows, the marketing of educational media products for young children has not received much attention. Under policies enforced by the Federal Trade Commission, all products must be advertised non-deceptively and with substantiation. When product claims are explicit (e.g., "studies have shown" or "tests have proven") the FTC expects a higher level of substantiation, while in cases where product attributes and effects are implied, the amount of substantiation required is subject to interpretation.[35]

- **Support the development of non-commercial educational media content for young children.** Some of those who believe that interactive media do offer an important educational tool for young children also feel that policies should be enacted to encourage the creation of high-quality educational content. As one long-time media researcher has written, "If we are serious about using the new electronic media for children's welfare, then we should emphasize policies designed to promote positive content rather than relying solely on those designed to prohibit access or restrict content. Our experience with television tells us that leaving the media environment entirely to commercial producers for whom the 'bottom line' is primary does not usually generate high-quality content."[36]

Given society's growing awareness of the importance of early childhood development – and parents' strong desire to help their children succeed – it seems likely that the market for media products for infants, toddlers, and preschoolers will continue to grow, and that educational benefits will continue to be a central theme in the marketing of those products.

This report begins the process of better understanding an emerging market that could impact the youngest generation of Americans. And while the report does not endorse any of the specific proposals listed above, it does highlight the importance of deepening our understanding of the impact of media on very young children, and of developing ways to help parents make more informed choices.

APPENDICES

APPENDIX A: PRODUCT FEATURES

VIDEOS AND DVDS:

Title: Left Brain

Company: Brainy Baby

Platform: DVD

Age Range: 6-36 months

Educational Claims: According to packaging, the "video will teach your child about: Language and logic, Patterns and sequencing, Analyzing details and more." In speaking about the series as a whole, the packaging states that "It is the first video series that can help stimulate cognitive development. Brainy Baby was created to give your child a jump-start on learning and provide a solid foundation in early education." It also tells parents that they can "Give (their) child the power to excel by using the video series that's more than just a lot of pretty pictures. The educational content of Brainy Baby can help give your child a learning advantage!" In a press release from 2002, the producer states that "...Brainy Baby can help children prepare to learn with their whole brain before entering school."

Parent Instructions: The press release also reminds parents that the videos are only meant to supplement other educational tools and are not a substitute for parental interaction. Further, the producer suggests that parents watch the videos with their infant and talk about what is happening on the screen.

Other Information: There is a "Behind the Scenes" clip in the DVD that features an interview with Senior Producer Marcia Grimsley, who cites her experience as a former educator and as a parent of preschoolers as essential to her tasks working on the videos. In particular, she refers to drawing on her classroom experience to know what children need to know before starting school, and making that content an explicit focus on the videos. The clip also features parent testimonials.

Title: Dora the Explorer: Map Adventures

Company: Nick Jr

Platform: DVD

Age Range: not listed

Educational Claims: According to the packaging, children "playing along" with the DVD will learn Spanish language skills, visual and spatial skills (including using maps and matching colors), and other problem solving skills.

Parent Instructions: Within the DVD is an on-screen, text-based Parents Guide, that includes information on Nick Jr's philosophy about edutainment as well as suggestions for parent-child activities to expand on the content in the DVD. Regarding the philosophy, the Parents Guide states "Because play is a critical tool in the social and cognitive development of every child, Nick Jr encourages play through all of its shows. Each episode of Dora the Explorer helps preschoolers to develop important skills as they play to learn." Later on, it comments that "In every episode, (Dora) and her best friend, a monkey named Boots, invite preschoolers to join their interactive adventures which promote cognitive growth, problem solving skills, an appreciation of Latino culture, an introduction to the Spanish language, and a whole lot of play."

Title: Curious Buddies: Let's Go to the Farm

Company: Baby Nick Jr

Platform: DVD

Age Range: 3-18 months

Educational Claims: The back of the packaging states that the video is "a play-along program specially designed for babies' social, emotional, cognitive, and physical development," and further refers to specific areas of learning including cause and effect, colors, and matching.

Parent Instructions: Although no parent instructions are found in the packaging or on the website, the DVD does include a feature for an optional voiceover by Dr. Rachel Barr, a developmental psychologist. The voiceover makes suggestions throughout the DVD regarding how to use the video content to prompt parent-child interaction. The voiceover also discusses the learning concepts being presented in the video, such as colors, animals, foods, matching, and opposites, and introduces strategies for parents to increase their child's vocabulary, both through using the DVD and through interactions in daily life.

Title: Baby Superstar: Forest Ranger

Company: Baby Super Stars

Platform: DVD

Age Range: 3-24 months

Educational Claims: The only references to educational benefits are on the packaging, where the front states "Helping young minds shine" and the back, "Familiar images enhance cognitive development."

Parent Instructions: The website for the product line is no longer available, nor are any parent instructions included in the product.

Title: Learning About Letters

Company: Sesame Workshop

Platform: DVD

Age Range: not listed

Educational Claims: The title itself is an explicit reference to a potential educational benefit, and the front of the packaging also proclaims "Help children learn the alphabet in this delightful fun-filled video!"

Parent Instructions: While Sesame Workshop has considerable information for parents, no information about either line of DVDs could be located other than a link from the website to Sony's online store for the line. No parent instructions are contained in the packaging for either product.

Title: Elmo's World: Babies, Dogs & More

Company: Sesame Workshop

Platform: DVD

Age Range: not listed

Educational Claims: The only reference to a potential educational benefit is on the back, in the statement "...each segment educates and delights viewers young and old."

Parent Instructions: While Sesame Workshop has considerable information for parents, no information about either line of DVDs could be located other than a link from the website to Sony's online store for the line. No parent instructions are contained in the packaging for either product.

Title: Mickey's Seeing the World: Around the World in 80 Days

Company: Disney

Platform: DVD

Age Range: 2-6 years

Educational Claims: The educational claims on the packaging are very specific, stating on the back that the product "Teaches Language and Geography Skills, Cultural Awareness, (and) Problem Solving," as well as making references to "early learning fundamentals." Similar claims are featured on the product website.

Parent Instructions: Included in the DVD is a short booklet with related activities for the child. The first page contains instructions for parents, focusing on how to "investigate together" with their child the skills and story presented in the DVD, and how to use that to "develop literacy skills."

Other Information: There are two modes in which the DVD can be watched: the first simply plays the story from beginning to end; and the second pauses between segments and introduces related questions that can be answered using the remote and also includes additional storybook-style lessons that focus on early reading skills.

Title: Letter Factory

Company: Leap Frog

Platform: DVD

Age Range: 2-5 years

Educational Claims: The front of the packaging states "Teaches Phonics!"; the back says "Teaches Letters, Phonics, Listening Skills"; similar educational claims appear on the product website.

Parent Instructions: Included in the DVD for both products (as well as on the website) is a parent guide, including an overview of the contents, a list of the skills covered, instructions for using the DVD with parent and child together, and enrichment activities to expand on the content. The instructions suggest that parents watch the video with the child, pause between segments to review concepts together, and encourage the child to sing along with the songs and mime actions.

Title: Math Circus

Company: Leap Frog

Platform: DVD

Age Range: 3-6 years

Educational Claims: The potential educational benefits are indicated on the front and back of the packaging, with "Learn beginning math!" on the front, and "Teaches Numbers, Counting, Addition & Subtraction" on the back.

Parent Instructions: Included in the DVD for both products (as well as on the website) is a parent guide, including an overview of the contents, a list of the skills covered, instructions for using the DVD with parent and child together, and enrichment activities to expand on the content. The instructions suggest that parents watch the video with the child, pause between segments to review concepts together, and encourage the child to sing along with the songs and mime actions.

Title: Baby Shakespeare

Company: Baby Einstein

Platform: DVD

Age Range: 1 year +

Educational Claims: The only reference to educational benefits is on the front of the packaging, where the phrase "Enriching a child's vocabulary through the beauty of poetry, music and nature" is placed below the title. Both the packaging and inserts refer to the product as a way for caregivers to interact with young children. The website stresses the multi-sensory and interactive nature of the products, but no educational claims are made beyond what is on the product packaging.

Parent Instructions: Within the DVD itself are several features for parents, including a multimedia catalog of Baby Einstein toys and a short clip featuring parent testimonials and an interview with Julie Aigner-Clark, the founder of the Baby Einstein line. Both focus heavily on the benefits of parents watching the video with their child, and using the content as a prompt for interaction. In the clip, Ms. Aigner-Clark states that "Probably the most important thing we've done is to encourage parents to sit with these children, to interact with their children..." The narration of the clip further talks about how the goal of the series is to "stimulate your baby's natural sense of curiosity" by exposing children to images and concepts from real life.

Title: Baby Einstein Language Nursery

Company: Baby Einstein

Platform: DVD

Age Range: 1 month +

Educational Claims: The back of the packaging features an endorsement quotation stating, "...this video creates engaging learning opportunities for infants and parents to share." Both the packaging and inserts refer to the product as a way for caregivers to interact with young children. The website stresses the multi-sensory and interactive nature of the products, but no educational claims are made beyond what is on the product packaging.

Parent Instructions: Within the DVD itself are several features for parents, including a multimedia catalog of Baby Einstein toys and a short clip featuring parent testimonials and an interview with Julie Aigner-Clark, the founder of the Baby Einstein line. Both focus heavily on the benefits of parents watching the video with their child, and using the content as a prompt for interaction. In the clip, Ms. Aigner-Clark states that "Probably the most important thing we've done is to encourage parents to sit with these children, to interact with their children..." The narration of the clip further talks about how the goal of the series is to "stimulate your baby's natural sense of curiosity" by exposing children to images and concepts from real life.

COMPUTER SOFTWARE:

Title: JumpStart: Advanced Toddlers

Company: Knowledge Adventure

Platform: Computer Software

Age Range: 18 months – 3 years

Educational Claims: Educational claims are made on both the back of the packaging and the inside flap. The back of the packaging also states that "Over 50 Skills Taught" and lists specific skills such as letter recognition, simple counting, and the parts of the body. In an apparent reference to the theory of multiple intelligences, the back of the packaging says that "Because kids learn in so many ways, JumpStart Advanced uses all seven learning styles to teach everything from letters to phonics to pre-math." Similar claims are made on the product website, but in reference to the entire JumpStart line rather than any one product in particular.

Parent Instructions: Within the software itself is a manual that provides instructions for installation and game play and that advises parents to "Remember that each child develops individually and that as a parent you will greatly enhance your child's experience with the software by joining him or her at the computer."

Other Information: This software package includes three separate programs: School Time, Sing-Along Time, and Art Time.

Title: Adventure Workshop Tots

Company: The Learning Company - Riverdeep

Platform: Computer Software

Age Range: 2-5 years

Educational Claims: Most of the educational claims are on the inside flap of the packaging, with statements such as "Amusing animations and songs help your toddler learn the alphabet" and "Discover letters, numbers, shapes, and more..." No educational claims are presented for the Winnie the Pooh Activity Center program, and the only claim for the LEGO My Style program is on the back of the packaging, with the phrase "Learning through investigative play!" The educational claims noted on the product website are similar to those on the packaging.

Parent Instructions: The packaging tells parents to "Play with your little one or watch as they explore on their own."

Other Information: The software package includes four separate programs: Sesame Street Toddler, Dr. Seuss's ABC, LEGO My Style, and Winnie the Pooh Activity Center.

Title: Disney Learning Toddler
Company: Disney Interactive
Platform: Computer Software
Age Range: not listed
Educational Claims: Educational claims are made throughout the packaging and product website, with statements such as “Teaches Letters, Numbers, Phonics, Shapes & Colors and More!” on the front. The back of the packaging has a more detailed list of skills “Toddlers can Learn,” including word association, rhyming, spatial relations, and foreign language vocabulary.
Parent Instructions: No parent instructions are included in the packaging or within the software itself beyond those on how to install and use the software.
Other Information: The software package includes three separate programs: Mickey Mouse Toddler, Winnie the Pooh Toddler, and The Book of Pooh.

Title: Caillou Magical Adventures
Company: Brighter Child Interactive
Platform: Computer Software
Age Range: 2-6 years
Educational Claims: The back of the package states that the software was “Designed by educators” and also lists skills covered, including capital and lowercase letters, counting and numbers, colors and shapes, and science. Similar educational claims are listed on the product website.
Parent Instructions: No parent instructions are included in the packaging or within the software itself beyond those on how to install and use the software.
Other Information: The software package includes three separate programs: Magic Playhouse, Four Seasons of Fun, and Party Fun & Games.

Title: The Boohbah Zone

Company: Brighter Child Interactive

Platform: Computer Software

Age Range: 2-5 years

Educational Claims: The back of the package lists "Skills Learned," including spatial relationships, cause and effect, matching, and patterns.

Parent Instructions: No parent instructions are included in the packaging or within the software itself beyond those on how to install and use the software.

Other Information: In addition to the software, the package also includes two card games and a large vinyl "activity mat" for use with the physical activity sections of the software.

Title: Blue Takes You to School

Company: Atari

Platform: Computer Software

Age Range: 3-6 years

Educational Claims: The back of the package states that children "learn valuable skills," including science, listening, and memory. Similar claims are made on the product website.

Parent Instructions: Within the program itself, a "Parents Area" gives suggestions for non-computer activities for parents and their children to do together.

Title: I Spy Junior

Company: Scholastic

Platform: Computer Software

Age Range: 3-5 years

Educational Claims: The packaging states that the games are "brain-building fun" that "help to develop beginning reading and math skills," and both the inside flap and the back detail the individual skills focused on, including pattern recognition, sorting, and word-object association. Similar claims are made on the website.

Parent Instructions: The list of features on the back notes that "animated instructions allow for independent play."

Other Information: The software package includes two separate programs: I Spy Junior and I Spy Junior Puppet Playhouse.

Title: Zooboomafoo Animal Alphabet

Company: Brighter Child Interactive

Platform: Computer Software

Age Range: 3-6 years +

Educational Claims: The back of the package states that children will learn "about animals, the alphabet, early reading and more!" and also presents a list of topics that children will "discover and learn," including early phonics and spelling, counting, pattern repetition, and logical reasoning. Similar claims are made on the website.

Parent Instructions: No parent instructions are included in the packaging or within the software itself beyond those on how to install and use the software.

VIDEOS GAMES:

Title: V.Smile

Company: VTech

Platform: video game console

Age Range: 3-7 years

Educational Claims: Educational claims for the V.Smile are made on the product packaging, on the product website, and in a national television commercial (dialogue below). The product motto across the packaging is "Turn Game Time Into Brain Time!" and the front of the package states that the system "Teaches school skills through video game fun," with phonics, comprehension, math, and other skills listed. The inside flap lists developmental benefits in language, cognitive, and logical thinking domains. The back of the package lists benefits specifically for 3-5 year-olds, including learning letters, numbers, phonics, colors, and shapes. The V.Smile website states that "VTech's new V.Smile TV Learning System turns game time into brain time by combining a video game platform and educational content in a system that connects directly to the television. A truly unique way to approach learning, V.Smile connects with both the most reluctant student and the most eager learner."

Parent Instructions: The V.Smile user's manual includes a letter to parents and a brief article by child psychologist Dr. Helen Boehm about creating a "balanced" TV diet for children. The article advises parents to "Limit sedentary screen time and blend physical and mental pursuits, like active on-screen games and video activities, into the TV mix."

Other Information: The commercial features a mother nagging her children about playing their V.Smile.

Mom: You'll never get into college if you don't play your video games!

Narrator: Moms are now thinking of video games in a whole new way.

Mom: If you don't play your video games, no dessert!

Narrator: Because of V.Smile, the first educational video gaming system. With V.Smile, your kids will learn letters, numbers, and love learning almost as much as they love playing.

Mom: You can stay up one hour later if you play your video game.

Narrator: V.Smile, the educational video game that turns game time into brain time.

Title: Alphabet Park Adventure

Company: VTech

Platform: V.Smile

Age Range: 3-5 years

Educational Claims: On the inside flap of the console packaging, claims specifically for this game are listed, including that it "Teaches: Letters, Phonics, Vocabulary, Spelling, Colors & Shapes."

Parent Instructions: Each V.Smile game has a printed user's manual in the package; besides providing usage instructions, the manual also outlines for parents the "educational curriculum" for each activity in the game cartridge (known as a "smartridge").

Other Information: This game was included in the package for the V.Smile console.

Title: Care Bears: A Lesson in Caring

Company: VTech

Platform: V.Smile

Age Range: 3-5 years

Educational Claims: Educational claims are noted throughout the packaging, with the front stating that the product "Teaches: Letters, Numbers, Counting, Colors, Shapes." According to the product website, "As kids journey through enchanting worlds with their Care Bear friends, they engage in challenging games and activities that teach key preschool skills like letters, numbers, counting and more. In five clever learning adventures kids must master lessons in colors, shapes, numbers, matching and letters to help their friends Tenderheart Bear, Share Bear, Bedtime Bear, Friend Bear and Funshine Bear."

Parent Instructions: Each V.Smile game has a printed user's manual in the package; besides providing usage instructions, the manual also outlines for parents the "educational curriculum" for each activity in the game cartridge (known as a "smartridge").

Title: The Wiggles: It's Wiggle Time

Company: VTech

Platform: V.Smile

Age Range: 3-5 years

Educational Claims: The back of the packaging for this game notes that it "Teaches children the preschool basics, including letters, numbers, vocabulary, music, and more!" The product website states that the "Learning Zone games (in It's Wiggle Time) focus on memory, sequences, colors and music to keep kids on target with preschool skills."

Parent Instructions: Each V.Smile game has a printed user's manual in the package; besides providing usage instructions, the manual also outlines for parents the "educational curriculum" for each activity in the game cartridge (known as a "smartridge").

Title: Elmo's World: Elmo's Big Discoveries

Company: VTech

Platform: V.Smile

Age Range: 3-5 years

Educational Claims: The packaging for this game says "help Mister Noodle with his silly antics while learning different preschool basics! In Elmo's World, learning is always so much fun!" Elsewhere on the package it says that the game "Teaches: Letters, Numbers, Counting, Colors, Shapes, Patterns, Size Comparisons, Music." More specific curriculum goals are outlined within the user's manual, such as "Learn different vocabulary and identify beginning letters" and "Learn eight colors and size comparisons with eight different sea creatures." The product website states that "In order to make big discoveries in these clever environments, kids must ace lessons in letters, colors, shapes, comparisons, numbers and animal identification."

Parent Instructions: Each V.Smile game has a printed user's manual in the package; besides providing usage instructions, the manual also outlines for parents the "educational curriculum" for each activity in the game cartridge (known as a "smartridge").

Title: Winnie the Pooh: The Honey Hunt

Company: VTech

Platform: V.Smile

Age Range: 3-5 years

Educational Claims: Educational claims are presented throughout the packaging, including statements like "Join Pooh and his friends for shorter learning games to keep you on target with school skills." The product website adds that "Fun arcade-style games teach the alphabet, numbers, counting, shapes, colors, vocabulary and phonics."

Parent Instructions: Each V.Smile game has a printed user's manual in the package; besides providing usage instructions, the manual also outlines for parents the "educational curriculum" for each activity in the game cartridge (known as a "smartridge").

Title: Miss Spider's Tea Party

Company: Fisher-Price and Scholastic

Platform: Read With Me DVD

Age Range: not listed

Educational Claims: The back of the packaging for Miss Spider's Tea Party listed the goals of the product to learn "phonics skills, word definitions, rhyming words" as well as "main ideas, story settings and events".

Parent Instructions: Within the DVD itself is a multimedia Parent Guide, with a short film clip that explained how the system would help children in learning to read, followed by a list of ideas for parent-child activities related to the book. The suggested activities were also included in a brief print Parent Guide included with each DVD.

Title: Leapster

Company: LeapFrog

Platform: handheld video game system

Age Range: 4-10 years

Educational Claims: The back of the packaging states that the Leapster allows a child to "Learn essential school skills with leveled games that teach reading, math and critical thinking skills for pre-K through 3rd grade." It also states that the electronic storybooks "teach literacy skills, story comprehension, vocabulary and phonemic awareness." Similar educational claims are on the product website and in the television commercial (dialogue below).

Parent Instructions: Included inside the Leapster packaging is a Parent Guide, which includes information on the "multi-sensory approach to learning" incorporated into the system,

Other Information: The Leapster can be used to play games, to watch and interact with videos, and to read and interact with multimedia books.

The commercial features previously bored children who mob around a Leapster.

Child 1: You gotta hit the missing letters!

Child 2: I know!

Child 1: You got 'em!

Narrator: Ever seen kids this into learning?

Child 3: Jump on the odd numbers!

Narrator: With the Leapster Learning Game System from LeapFrog, you will! It's everything they love about video games, but entirely educational.

Game: Nine times what equals 81?

Child 1: Get the nine!

Narrator: And with the largest library of titles.

Mom: You ready?

Child 2: We're almost through the times tables!

Narrator: They'll never want to stop. With Leapster from LeapFrog – the name of the game is learning.

Title: Read With Me DVD

Company: Fisher-Price and Scholastic

Platform: DVD-based video game system

Age Range: 3-7 years

Educational Claims: Learning claims are listed throughout the packaging, with the text on the back stating that "This animated interactive learning system helps build story comprehension and vocabulary."

Parent Instructions: Instructions for parents are included within the individual discs.

Other Information: From Fisher-Price and Scholastic is the Read with Me DVD system, with hardware and interface very similar to that of the InteracTV. For this system, the DVDs feature well-known children's picture books, and the learning goals focus on early literacy, including story comprehension and vocabulary.

Title: The Little Engine That Could

Company: Fisher-Price and Scholastic

Platform: Read With Me DVD

Age Range: not listed

Educational Claims: This title is included within the Read With Me DVD packaging.

Parent Instructions: Within the DVD itself is a multimedia Parent Guide, with a short film clip that explains how the system can help children learn to read, followed by a list of ideas for parent-child activities related to the book. The suggested activities are also included in a brief print Parent Guide included with each DVD.

Title: Learning with Leap

Company: LeapFrog

Platform: Leapster

Age Range: not listed

Educational Claims: The front of the Leapster packaging includes the statement "Included game teaches over 50 skills!" The Parent Guide lists the specific skills that each game in Learning with Leap is teaching and explains to parents why these skills are important for their children. For example, in the Rabbit River – Reading game, the aim is "learning the letters of the alphabet and what sounds they represent."

Parent Instructions: The Parent Guide also presents several home activities for parents to try with their children to expand upon the curriculum in the games.

Other Information: This game is pre-loaded onto the Leapster system, so no game cartridge is involved.

Title: Dora the Explorer: Wildlife Rescue

Company: LeapFrog

Platform: Leapster

Age Range: 4-6 years

Educational Claims: Educational claims are made throughout the packaging, with a statement on the front that the product "Teaches 45 Skills" including letters, phonics, counting, science, and Spanish. The inside flap also states that the games "teach essential pre-kindergarten and kindergarten skills" and gives a more detailed list of skills taught, including letter and number sequencing, sorting and matching, and understanding time.

Parent Instructions: As with the Leapster itself, a Parent Guide is included inside the game packaging; the guide explains the learning goals, why they are important, and parent-child activities to try.

Title: Letters on the Loose

Company: LeapFrog

Platform: Leapster

Age Range: 4-6 years

Educational Claims: Again, educational claims are made throughout the packaging; the front states that the game "Teaches: Uppercase and lowercase letters, Phonics, (and) Letter Writing." A Parent Guide is included in this game which explains how "letter knowledge" and "letter writing" are taught in the game. The website states that children can "Play 26 fun letter games and learn essential preschool and kindergarten skills such as letter names and letter sounds and learn to write the entire alphabet for your letter book."

Parent Instructions: As with the Leapster itself, a Parent Guide is included inside the game packaging; the guide explains the learning goals, why they are important, and parent-child activities to try.

Other Information: This cartridge includes 26 games (one for each letter) that can be played on the Leapster handheld, plus some additional games that can only be accessed by plugging an L-Max into the television.

Title: InteracTV

Company: Fisher-Price

Platform: DVD-based video game system

Age Range: 3 years +

Educational Claims: According to the packaging, the system "allows children to interact with their favorite characters and shows in a fun and educational way," which "transforms television into an educational, active, and empowering experience!" The product website states that "Over 100 randomized learning questions have been added to the shows, so even when kids play these DVDs again and again, they'll never have the same experience twice!"

Parent Instructions: Parent instructions are on the included DVD and are discussed below.

Other Information: The product uses specially created DVDs, which are adapted from popular children's television programming. The DVDs have clips taken from these programs; interspersed between the clips are short interactive segments akin to quizzes which children can answer by pressing the appropriate picture or button on the InteracTV controller.

Title: Elmo's World, Dora the Explorer, and SpongeBob Squarepants

Company: Fisher-Price

Platform: InteracTV

Age Range: 3 years +

Educational Claims: The console packaging includes educational claims for the DVD, stating that it includes "Learning Lessons" such as "Numbers, Colors & Counting," "Divergent Thinking & Observation Skills," "Relational Concepts & Directional Orientation," and "Comparatives/Opposites."

Parent Instructions: When first inserting this DVD, a short clip appears with an introduction from Dr. Alfano at Fisher-Price, who informs parents that "through repetition and reinforcement, InteracTV entertains and teaches." This clip is followed by a brief instructional video for parents, which shows them how the system works, and points out that children will be able to use the system independently.

Other Information: This InteracTV disc is included with the InteracTV console.

Title: SpongeBob Squarepants: Krusty Krab Adventures

Company: Fisher-Price

Platform: InteracTV

Age Range: 4 years +

Educational Claims: The front of packaging states that the game is to help children "Learn: Money Values, Sentence Structure, Counting, Early Reading, Memory Skills, Logical Thinking.... AND MORE!" The back of the packaging gives a more complete list of the items included in the "Learning Curriculum," ranging from "Counting & Matching" to "Deductive Reasoning" and "Hygiene."

Parent Instructions: No parent instructions are included in the packaging or within the disc itself beyond those on how to use the disc.

APPENDIX B: CLASSIFICATION OF EDUCATIONAL CLAIMS

The claims of potential educational benefits for electronic multimedia products for young children vary significantly in type, specificity, and location. Some claims refer to cognitive development in general while others focus on attainment of specific skills or knowledge. In general, the older the recommended age range, the more specific the educational claims tend to be. Likewise, claims about educational benefits are generally more specific for software programs than for DVDs.

Educational claims for the products examined in this report are made in a variety of contexts: on the product packaging, on product websites, within press releases, in commercials, and even within the products themselves. One approach used by several companies is to feature parent testimonials that include claims of educational benefits. Often, the claims made in these parent testimonials will be stronger and more explicit than those made by the company.

Cognitive Development Claims

These claims are most commonly made for products designed for use by children too young for realistic pre-literacy claims, and generally focus on areas of cognitive development such as memory, pattern recognition, and cause/effect relationships.

Critical Thinking and Problem Solving Claims

These occur across categories in almost all products for preschool-aged children, and in many ways are simply the next stage of the cognitive development claims seen in products for younger children.

Pre-Literacy Claims

These are among the most commonly observed educational claims, across all product categories. Depending on the age range, most of these claims focus on some combination of letter recognition, phonics, and story comprehension.

Pre-Numeracy Claims

These are even more common than pre-literacy claims in some categories and age groups. Most often these claims are based on curriculum targets involving shapes, size or amount comparisons, counting, or number recognition, but early arithmetic claims are made for some products as well.

Content Knowledge Claims

These are among the least common educational claims across the products examined for this report; when made, they generally involved basic science or social studies knowledge – most commonly, of animals, seasons, weather, and countries.

Foreign Language Claims

Several products made foreign language claims, including products across all categories which used content from Dora the Explorer and incorporated Spanish vocabulary into the learning curriculum. Beyond this, there were both DVDs and software programs that had educational claims based on introducing foreign language vocabulary.

APPENDIX C: LIST OF INTERVIEWS

Baby Einstein

Rashmi Turner, Vice President, Marketing and Communications

Fisher-Price

Kathleen Alfano, PhD, Director of Child Research
Kathleen Kremer, PhD, Manager, Child Research
Vincent Smart, Director of Marketing for Learning
Kevin Curran, General Manager, Fisher-Price Friends
Laurie Oravec, Director, Public Relations and Brand Development

Knowledge Adventure

Leslie House, Senior Vice President of Product Development

LeapFrog

Jerry Perez, President
Beth Kitzinger, Kaplow Communications

Nick, Jr.

Stephen Youngwood, Senior VP, Media Products Group, Nickelodeon

Sesame Workshop

Rosemarie Truglio, PhD, Vice President of Research and Education
Lauren Ostrow, International and Product Publicity

Small Fry Productions

Marcia Grimsley, Senior Producer

Topics Entertainment

Max Cowsert, Product Manager

Vtech

Julia Fitzgerald, Vice President of Marketing

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