

FINNISH PRESCHOOL AND FIRST-GRADE CHILDREN'S USE OF MEDIA AT HOME

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Abstract: *We investigated Finnish children's use of print and electronic media in the home and their literacy development. Questionnaire data from 857 parents of preschoolers (collected in 2006 and 2007) and first graders (2008) showed that homes were well equipped with electronic media including Internet access in almost every home, although only a third of the children used the Internet. Television, print media, and videos/DVDs were more commonly used than computers. Most first graders but few preschoolers had mobile phones. Most parents read bedtime stories, had a sizable number of children's books, and library visits were common. Boys' and girls' skills in reading did not differ at the beginning of their preschool year. But girls showed more interest in writing while boys played more console and computer-based games. Most first graders were reading early in the school year, suggesting that electronic media are not harmful but may even support literacy development.*

Keywords: *print literacy, media literacy, electronic media, family literacy practices, early literacy development, preschool, first grade.*

INTRODUCTION

Young children's use of print and electronic media can influence the way they come to understand literacy, which, in turn, can impact their future achievement as readers. Considerable research details how young children's literacy-related practices contribute to their literacy development, particularly in practices relevant to print media (Teale & Sulzby, 1989; Yaden, Rowe, & MacGillivray, 2000). But children are increasingly surrounded by and engaged with nonprint media such as television, computers, the Internet, and mobile phones. As documented in research in the USA and the UK, for example, children watch considerable

amounts of television (e.g., Marsh et al., 2005). Similarly, surveys evidence the increasing use of newer technologies, such as computer software and the Internet, by children of early school age and younger (Common Sense Media, 2011; Rathbun & West, 2003; Rideout & Hamel, 2006). In fact, commercial markets are targeting even very young children (Vandewater et al., 2007). Studies have found that children use a variety of technologies (e.g., Blanchard & Moore, 2010) and that family literacy practices have changed from the use of mostly print-based texts to techno-literacy practices involving multimodal texts using new technology such as computers, console games, and mobile phones (Marsh, 2004). Although the role of moving and still images is increasing, words and letters on the screen continue to be important (Marsh, 2009).

Considerable debate on the effects of technology on young children has taken place. With regard to electronic media, television has been the most widely researched, with evidence indicating that, depending on the amount and type, television viewing can have both positive and negative effects on literacy (e.g., Neuman, 1988; Schmidt et al., 2006). However, much less research is available on the effects of newer technologies (see Rideout, Foehr, & Roberts, 2010). Some view newer digital technologies as a threat to the use of books, newspapers, and magazines (Rideout et al., 2010). In contrast, others view new technologies as something to be valued, and advocate expanding the perspective on what counts as literacy in young children (e.g., Karchmer, Mallette, & Leu, 2002).

But what is the situation in Finland? Our purpose in this study was to examine young Finnish children's engagement with newer technologies, as well as more traditional media such as television, radio, and print-based material in the home. Because most research on young children's media use in Finland has addressed only some aspects of media use, we were interested in including all these media in the same study. Furthermore, we also investigated children's emerging literacy knowledge in order to learn how these media may contribute to that knowledge. As we detail below, Finland is characterized by a strong tradition of valuing reading, and, as research suggests, children's easy access to technologies. Thus, Finland is an interesting context in which to explore young children's media use, with an eye toward shedding light on the debate about the effects of technology on young children's literacy development. Possible outcomes of these trends could result in, for example, newer technologies displacing older media such as books, or literacy-related practices reflecting expanded media use, with older media being supplemented with rather than replaced by newer technologies.

Finland is a reading nation. Finns subscribe to and read newspapers at an exceptionally high level, when compared with international trends (Sauri, 2007). In addition, Spadaro (2002) reported that Finns use libraries more frequently than any other nation in the European Union.

Recently, however, some decline in book reading in Finland has been noticed. For example, Lappalainen (2008) found that seventh-grade students borrowed fewer library books in 2008 than their counterparts in 2002. Similarly, in a Gallup Finnish International poll (YIPPEE, 2008), 12% of 3- to 16-year-olds reported that they never read books although only 2% reported never watching television. In addition, the poll indicated that daily use of the Internet is more frequent among 3- to 16-year-olds than reading books (63% vs. 48%, respectively). Such data seem to suggest that newer technologies are rivaling the use of traditional media such as children's books. However, other studies suggest that reading is still a quite frequent activity in Finland. For example, Hirvonen (2012) found that 46% of first graders (7-year-olds) reported reading books daily. Thus, additional research is needed to address the interplay of Finnish children's reading habits and use of other media, especially for young children.

Many Finnish researchers have studied school-age children's media use (children start school at age 7 in Finland). For example, studies indicate that digital gaming is common among school-age children. Ermi, Mäyrä, and Heliö (2005) found that 98% of 10- to 12-year-olds reported playing digital games at least occasionally, with 75% doing so at least once a week. All the boys in that study played digital games at least to some extent, but a few girls reported they did not play such games at all. Typically, the playing took place with a home computer (88% of families had a computer). Moreover, 54% of children indicated they had other equipment for playing games, with only 4% reporting that they did not. Among 8- to 10-year-olds, Matikkala and Lahikainen (2005) found that 84% of boys reported playing computer games at least once a week, but only 54% of girls did so. These children also used media for communication: 58% used mobile phones, 39% sent text messages, 31% used e-mail, and 16% participated in group e-mails between several writers. Hirvonen's (2012) research indicated that 42% of 7- to 11-year old children played computer, console, or Internet games daily. In a study of 11-year-olds' Internet use, Oinas-Kukkonen and Kurki (2009) found that 90% reported regular use, but with different patterns by gender. While 60% of the boys reported playing Internet games daily, only 36% of the girls did so. Instead, the girls used the Internet primarily for social interaction. Suoninen (2011) found that 86% of 7- and 8-year-old boys and 65% of girls played digital games weekly, with 30% of boys and 15% of girls playing these games daily. Girls mainly played platform games and learning games; boys preferred platform games, as well as driving, sports, and adventure games.

Research on school-age Finnish children also indicates that watching television is common. For example, in Suoninen's (2011) study, parents reported that 66% of 7- and 8-year-olds watched television daily. Similarly, Uusitalo, Vehmas, and Kupiainen (2011) found that the small groups of 11-year-olds they interviewed reported watching 96 minutes of television a day, on average, whereas the 14-year-olds reported watching 88 minutes of television.

Similarly, television viewing has also been studied with below school-age children. Valkonen, Penonen, and Lahikainen (2005) interviewed 5- and 6-year-old children and surveyed their parents in two large Finnish cities. On average, these children watched television 1.4 hours per day, but the time varied from 36 minutes to 4.2 hours. Generally, children watched only children's programs on their own, while other programs were watched with their parents. In such circumstances, parents were able to influence which programs were viewed as well as to share and reflect on what they and their children had seen. They also were able to restrict their children's television viewing. Similarly, Korhonen (2008) found that 5- and 6-year-old children typically watched 1 to 2 hours of television daily, and that 90% of the parents she surveyed reported controlling their children's television access. Although parents sometimes worry that watching television can be harmful to their children, some parents in Korhonen's study reported that their children benefited from watching television, by learning new vocabulary and ideas, as well as widening their worldview. And, of course, parents report that television entertains their children (Koivusalo-Kuusivaara, 2007).

Indeed, television viewing has been the focus of many studies. But in a recent survey, Suoninen (2011) investigated not only children's television viewing but also their use of media more widely. Her results confirmed widespread television use, with parents reporting that 34% of children under age 3 watched television daily, while 63% of 3- and 4-year-olds did so. In addition, her survey examined children's use of the Internet, mobile phones, radio, and CDs. Her results showed, for example, that parents indicated that about 38% of 5- and 6-year-olds

used the Internet 1–2 times a week, while 70% of 7- and 8-year-olds did so. Similarly, older children (7- and 8-year-olds) were more frequent players of digital games, with parents reporting that 75% of them played 1–2 times a week, whereas only 41% of the younger children (5- and 6-year-olds) did so. Interestingly, only 15% of those games were designed for learning. Parents reported a substantial increase in the opportunity to use cellular phones by age: Only 30% of 5- and 6-year-olds used mobile phones but 93% of 7- and 8-year-olds did so. Parents reported that 43% of these older children used mobile phones daily. But listening to recordings or the radio was more equal, with 86% of 5- and 6-year-olds and 80% of 7- and 8-year-olds listening to them 1–2 times a week. However, listening took place primarily in the car. In regard to reading, 58% of parents reported reading to their 5- and 6-year-old daily, with 91% reporting reading at least three times a week. Parent also indicated that their 5- or 6-year-old read on their own or browsed books frequently, with 79% doing so 6-7 times a week and 21% once or twice a week. Parents reported that 65% of 7- and 8-year-olds read books 6-7 times a week and 35% read 3–5 times a week. Reading magazines was slightly less frequent, with 26% of 7- and 8-year-olds reading 6-7 times a week, 42% reading 3-5 times a week, and 32% reading 1-2 times a week. Based on such findings, Suoninen (2011) concluded that although children regularly used several electronic media, they still read books and magazines.

Many studies reviewed above have focused on Finnish children's use of television and computers. Because family literacy practices may include a variety of print literacy and technoliteracy (Marsh, 2004), we investigated both print and electronic media. In addition, many studies on children have used a case study approach in which the number of children is small (e.g., Koivusalo-Kuusivaara, 2007; Korhonen, 2008). In contrast, we targeted a population large enough to generalize the results. Similar to the current study, Suoninen (2011) also used a larger population and queried parents about young children's print and electronic media use. However, our study differs from Suoninen's by including information on children's emergent literacy knowledge, such as their letter knowledge. Moreover, our populations are different. We surveyed Finnish parents about their preschool (6-year-old) and first-grade (7-year-old) children's home media use in a city that is well known for technology, as well as in the rural areas around the city. Thus, our results provide information on potential differences in the two contexts.

We were interested in learning whether children's practices at home are different among preschool and first-grade children since Finnish first graders are expected to be much more independent than the preschool children in all practical matters (e.g., Strandell & Forsberg, 2005). As a result, parents may think that they no longer need to read to first graders, letting them take care of their activities in print-literacy or the use of technology on their own. It is also likely that first-grade children have already learned to read, which, in turn, might result in more independent use of media. Therefore, we aimed to shed light on the issue of whether newer technologies are a threat to the use of traditional media.

METHOD

Participants

Parents of preschool (6-year-old) and first-grade (7-year-old) children participated in this study. Parents came from either a city or rural areas. The city is currently well known for its

technology (e.g., Nokia). Earlier, paper mills were big employers in the area. The city has both a multidisciplinary university and a university of applied sciences, as well as other research institutes. The rural areas consist of regions about hundred kilometers north and south of the city. These areas are midsize communities in which people make their living mainly by farming or employment at small enterprises.

Preschools are typically housed in Finnish kindergartens, which provide care for children aged 1 through 6, somewhat analogous to day-care centers in the USA. In this study, the city preschools were housed in kindergarten buildings, as is typical, but in two of the rural cases, the preschools and kindergartens were located within elementary schools. Regardless of their location, all preschools follow the same national curriculum framework.

In this study, the preschool students' parents came from both the city and rural areas. The first-grade students' parents were all from the city.

Questionnaire

Our questionnaire consisted of 40 questions (see the Appendix) in four categories: 10 items on the children's demographics and family background, 11 about the availability of home media, 11 on how often children used these media and with whom they used them, and 8 questions on children's literacy development.

Our questionnaire drew on the previous work of Marsh et al. (2005), who conducted research with parents of young British children, and who, in turn, drew on similar research in the USA (Rideout, Vandewater, & Wartella, 2003). However, our questionnaire included questions that dealt with children's literacy development (see the Children's Literacy Development section below), an area that Marsh et al. (2005) did not address. In addition, Marsh and her colleagues studied children aged from birth to 6 years, while we studied children aged 6 and 7. Studying older children allowed us to investigate how parents viewed their children's literacy development.

The survey instrument comprised primarily multiple-choice questions, each with two to 10 answer options. Of the five nonmultiple choice questions, two asked parents the year of their child's birth and the language used at home; the other three addressed the number of newspapers, magazines, and children's magazines subscribed to by the family. All questions resulted in data on a nominal or ordinal scale.

Data Collection

We surveyed parents in the autumn that their children started preschool (in 2006 or 2007) or first grade (in 2008). We sent the surveys to the home through kindergarten and first-grade teachers and they were returned via teachers in a sealed envelope. In the city, 496 questionnaires were sent to preschool parents and 55% (275) of them were returned; 564 questionnaires were sent to first-grade parents, with a return rate of 76% (427). We sent 250 questionnaires to rural parents of preschool children, with a return rate of 62% (155). The overall return rate was 65%. The preschool questionnaires were sent to city parents from randomly selected kindergartens in September 2006, and in October 2007 to parents in rural areas surfaced through a network of kindergarten teachers who had participated in an in-service training with the first author. The personal contact with teachers in the rural area may explain the difference in return rate between

the city (55%) and rural (62%) preschool parents. In both cases, however, these response rates are near the 60% response rate in Marsh et al.'s (2005) study. The questionnaires to first-grade parents were sent October 2008 via the teachers in randomly selected city schools. Because there were two years in between the city preschool and first grade data collection, none of the parents were surveyed twice for the same child. All parents had about 2 weeks to return the questionnaire.

Data Analyses

The data were analyzed using frequencies and cross tabulations, with chi square (χ^2) to test significance because the data were either on a nominal or ordinal scale. Because the sample size was large, small differences could have resulted in statistically significant differences that were unwarranted. Therefore, to address this issue and improve reliability, we tested statistical significance by sampling at random a smaller set of the data (see Lenth, 2001). Specifically, we first used the entire data set for cross tabulation and for statistical analysis, but we verified the results by randomly selecting a smaller sample (100 questionnaires from preschool data and 100 from first-grade data) for the same analyses. In our results, we report frequencies in the cross tabulations and statistical significance based on the entire data set, but we used the smaller random sample to verify that the significant effects were reliable.

RESULTS

Parents of first-grade and preschool children in the city did not differ in educational level (as noted, in the rural area, the survey was sent only to parents of preschoolers). However, there was a difference in educational level between parents in the city and rural areas ($\chi^2 = 23.08, p = .000$), with rural parents having a smaller percentage of advanced degrees (16%) than city parents (34%). Rural parents were more likely to have vocational education (37%) than city parents (22%). Nevertheless, many rural parents had college or polytechnic education (47%) at about the same rate as city parents (45%). The majority (89%) of parents who participated were female. Almost all families (98%) were native Finnish speakers. There were no statistically significant differences in families' level of income in our sample.

We report the results mainly in tables. There were a few statistically significant differences in results between city and rural children, boys and girls, and preschool children and first-graders. Whenever such a difference occurred, we report it in the text.

Home Equipment

Homes were well equipped, as shown in Table 1. Eighty-eight percent of homes had televisions. Overall, 97% of homes had a computer: This figure was 99% in first-graders' homes and 95% in preschoolers' homes. Internet access was available in 96% of homes. Console games were less common than televisions or computers, with more first graders (62%) than preschool children (45%) having console games at home ($\chi^2 = 22.57, p = .000$). In addition, more first graders' homes (87%) than preschool children's homes (77%) had a digital camera ($\chi^2 = 14.38, p = .000$).

Table 1. Types of Equipment Present in the Home.

Home equipment	Preschoolers	First graders	Average
TV	88%	88%	88%
Videos	94%	93%	94%
Phone/ mobile	100%	100%	100%
Radio	96%	93%	95%
Stereos	97%	95%	96%
Computer/ laptop	95%	99%	97%
Console game	45%	62%	53%
Video camera	41%	48%	44%
Digital camera	77%	87%	82%
Internet	94%	97%	96%

However, as shown in Table 2, it was unusual for children to have their own computers (5% for both preschool children and first graders). Similarly, only 21% of preschoolers and first graders had a television in their own room. In addition, the results suggest that most children may receive their own mobile phone when they start school, since 79% of first graders had one, while only 10% of preschoolers had a phone ($\chi^2 = 402.5$, $p = .000$).

Table 2. Types of Equipment in a Child's Own or Shared Room.

Equipment in own room	Preschoolers	First graders	Average
TV	21%	21%	21%
Videos	20%	17%	19%
Radio	24%	31%	28%
Stereos	41%	48%	44%
Computer/laptop	5%	5%	5%
Internet	8%	11%	9%
Console games	11%	17%	14%
Own mobile phone	10%	79%	45%

Television and Video/DVD Viewing and Listening to the Radio

Overall, as shown in Table 3, the time spent watching television each day ranged from a small minority (4%) of children who watched 3 hours or more to 12% who did not watch television at all. Most children were in the middle: 45% watched television 1–2 hours daily while 40% watched up to an hour daily.

There was a significant difference in preschool children's television watching in the city and rural areas ($\chi^2 = 20.27$, $p = .001$). Specifically, 53% of rural preschool children watched television one or more hours daily, compared to only 42% of city preschoolers doing so. Interestingly, more children in the rural area (19%) than in the city (10%) did not watch any television at all.

Table 3. Time Spent with Various Media.

Hours per day	> 3	1–2	< 1	None
TV	4%	45%	40%	12%
Videos/DVD	1%	22%	64%	13%
Stereos	1%	6%	69%	25%
Radio	1%	3%	54%	42%
Computer	1%	14%	67%	18%
Console game	1%	8%	39%	52%
Print media	3%	31%	65%	1%

Note. Because of rounding, percentages may not equal exactly 100%.

As shown in Table 4, watching videos and DVDs was more popular among the preschool children than first graders: 27% of preschool children watched videos or DVDs daily or almost daily, whereas 16% of first graders did so; 52% of first graders and 42% of preschool children watched them only once a week or less ($\chi^2 = 22.82, p = .000$).

Table 4. Frequency of Using Different Media Activities by Finnish Preschooler (pr) and First Grader (fg).

Frequency per Week	6-7 days		4-5 days		2-3 days		once		less than weekly		never	
	pr	fg	pr	fg	pr	fg	pr	fg	pr	fg	pr	fg
Watches TV	64%	64%	19%	17%	4%	6%	1%	1%	2%	5%	10%	7%
Watches videos/DVDs	8%	6%	19%	10%	31%	32%	20%	26%	19%	25%	3%	1%
Listens to the stereo/CDs	10%	6%	9%	9%	22%	25%	22%	15%	32%	35%	5%	10%
Listens to the radio	9%	3%	8%	8%	13%	16%	17%	13%	35%	38%	18%	22%
Uses computer	7%	13%	12%	16%	24%	31%	21%	16%	27%	22%	8%	2%
Plays console games	1%	4%	6%	10%	11%	16%	9%	13%	21%	23%	52%	34%
Reads or scans books, comics or magazines	65%	66%	20%	16%	10%	11%	3%	5%	2%	2%	0%	0%
Uses cell phone for playing or calling*	3%	32%	3%	15%	9%	20%	9%	8%	37%	15%	39%	10%

Note: The cell phone was not necessarily the child's own.

Because of rounding, percentages may not equal exactly 100%.

Listening to the radio was more popular among the preschool children than first graders ($\chi^2 = 18.79, p = .002$). For example, 17% of preschool children listened to the radio daily or almost daily, whereas 11% of first graders did so. Eighteen percent of preschool children and 22% of first graders did not listen to the radio at all.

The Use of Computers and Console Games

As shown in Tables 3 and 4, using the computer was more popular than playing console games. This finding makes sense, considering that 97% of families had a computer and only 53% had a

game console (see Table 1). Although a computer was available in almost every home, Table 3 indicates that only 15% of children used it one hour or more daily. In addition, 18% of children did not use computers at all. First graders used computers more often than preschool children: 29% of first graders used computers at least four times a week but only 20% of preschool children did so ($\chi^2 = 32.36, p = .000$).

First graders also spent more time daily with console games than preschool children. Thirty-one percent of first graders played console games more than half an hour daily, while 18% of preschoolers did so. For preschool children, 61% never played console games compared with 43% of first graders ($\chi^2 = 31.36, p = .000$). Girls played console games considerably less frequently than boys, with 67% of girls and 38% of boys not playing at all. The daily playing was moderate for most children (see Table 3). It is worth noting that only 1% of boys (and no girls) played 3 or more hours daily. Thirty-six percent of boys and 12% of girls played console games half an hour to 2 hours daily ($\chi^2 = 88.57, p = .000$).

Some children were also involved in other activities with computers. As shown in Table 5, 33% of children played computer games designed for learning very often or often, while 54% played other computer games very often or often. For preschool children, 39% (both in the city and rural areas) played games designed for learning very often compared to 27% of the first graders ($\chi^2 = 34.48, p = .000$). Parents also indicated that 17% of the children drew with graphic tools very often or often, 58% sometimes and 24% never, with girls using graphic tools more frequently than boys. Thirty-two percent of boys but only 17% of girls did not use graphic tools at all ($\chi^2 = 27.91, p = .000$).

Table 5. Use of Computers.

Working/playing with computer	Almost always	Often	Sometimes	Rarely	Never
Learning games	12%	21%	33%	20%	14%
Other computer games	11%	33%	25%	15%	17%
Music	0%	7%	17%	20%	57%
Movies	1%	5%	14%	16%	64%
Drawing	2%	15%	34%	24%	24%
Surfing the Internet	2%	5%	11%	15%	67%
Writing	1%	2%	9%	16%	72%
Chatting	0%	1%	2%	3%	95%
Email	0%	0%	2%	3%	95%

Note. Because of rounding, percentages may not equal exactly 100%.

Chatting via Messenger was even more rare than graphic tool use, with 95% of children never doing so while 1% of the children were frequent users. Similarly, 95% of children never read or wrote e-mails. Netsurfing was a bit more popular, with 7% of the children doing it very often or often, 26% sometimes or seldom, and 67% never.

Availability of Print Media

Despite the increase in electronic media in Finland, it remains customary to subscribe to newspapers. However, newspaper subscriptions differed between the families in the city and those in the rural areas. In the latter locations, 53% of families subscribed to two or more newspapers, as compared to 24% ($\chi^2 = 60.03, p = .000$) in the city.

Most homes (60%) have more than 40 children's books, 29% have 21–40 books, and 11% have fewer than 20 books. Parents reported the number of other books (not specifically for children) at home as follows: 20% had more than 200 books, 26% had 81–200, 41% had 21–80, and 13% fewer than 20 books. There were more books in city homes (48% reported more than 100 books) than in homes in the rural area (28% reported more than 100 books; $\chi^2 = 21.62, p = .001$). Forty-eight percent of parents in rural areas reported visiting libraries at least 2–3 times a month compared to 32% of city parents ($\chi^2 = 11.40, p = .022$). Similarly, preschool children (47%) in rural areas visited libraries more often than city preschool children (23%; $\chi^2 = 28.46, p = .000$).

Use of Print Media

As indicated in Table 3, more children (34%) spent at least 1 hour per day with print media—such as reading books or comics in children's magazines—than with either computers (15%) or playing console games (9%). Only television watching, with 49% viewing at least an hour daily, was more frequent than time spent with books and other print materials. Although taken together, nonprint media certainly compete with print media, nevertheless 85% of preschool children were engaged in reading books, magazines, or comic strips 4–7 days a week (see Table 4). Typically, this practice took place with their parents. In fact, as reported in Table 6, most parents of both preschoolers and first graders read bedtime stories to their children. However, there was a statistically significant difference between preschool and first grade bedtime reading, with 70% of preschool children's parents reading very often or often while 58% of first graders' parents did so ($\chi^2 = 15.93, p = .001$). It is important to note that, according to the parents, 21% of preschool children were able to read by themselves, while 77% of the first-grade children were able to read. Despite the fact that most first graders had learned to read, most parents reported still regularly reading bedtime stories to them.

Table 6. Parents Reading Bedtime Stories.

	Very often	Often	Sometimes	Never
Preschoolers	50%	20%	26%	4%
First graders	41%	17%	33%	9%
Average	45%	19%	30%	6%

According to the survey, 88% of the parents started reading to their children before the child was a year old. But there was a difference according to the level of the parents' education ($\chi^2 = 50.44, p = .000$). Parents with a higher level of education were more likely to start reading early. For example, while 45% of parents with vocational education or less began reading to their children before 6 months of age, 66% of those with advanced degrees did so.

Children's Literacy Development

We included questions about children's emerging literacy to investigate how actively children were involved in print media in their environment. For example, these questions addressed how actively children asked questions about print, whether they showed interest in print in various media contexts, to what extent they recognized letters and words, whether they attempted to write and were interested in writing, and whether they were able to read. We also examined whether there were differences between boys and girls. We focus here on preschool children because, as noted, parents reported that 77% of the first graders were already reading conventionally.

The results for preschool children indicated that only 7% had not demonstrated interest in print by asking questions about what is written (e.g., on television, shop windows, signs) whereas 37% asked questions and 56% of the children were actively trying to recognize letters and words. In fact, parents reported that 72% of the children were able to recognize all the letters at the beginning of their preschool year and only 2% did not recognize any. As shown in Table 7, parents indicated that the most interesting contexts for reading attempts were books, magazines, and comics, with 49% of the children very interested in recognizing words in them and only 1% not showing any interest. Logos, such as those in shops, appeared to be very interesting for 37% of the children. As might be expected, the majority of children showed at least some interest in these logos. Almost equally interesting contexts were texts in the children's home environment. Namely, 32% of the children attempted to read texts such as those on milk cartons while only 5% of children were not interested in reading them. Surprisingly, texts on television were a much less interesting context for the literacy activity, with only 11% of children very interested in recognizing these texts and 25% not interested at all.

Similarly, writing attempts were frequent, with 53% of parents reporting that their children were either writing or pretending to write daily. In addition, when asked if their child was interested in writing, parents noted that 49% of children were very interested in writing activities. However, there was a statistically significant gender difference in interests, with 66% of the girls interested in writing but only 34% of the boys demonstrating similar interest ($\chi^2 = 53.83$, $p = .000$). Moreover, a similar statistically significant difference was found between the frequencies of writing activities: 70% of the girls wrote daily but only 39% of the boys did so ($\chi^2 = 42.62$,

Table 7. Preschooler Interest in Finding Out About the Printed Text in Various Situations.

How interested the preschooler is in	Very interested	Quite interested	A bit interested	Not interested	Don't know
Text on television	11%	24%	32%	25%	8%
Texts of different magazines	24%	35%	32%	9%	0%
Ads	18%	30%	34%	17%	1%
Shop signs, road signs, etc.	37%	34%	26%	3%	0%
Other texts at home (e.g., on a milk carton)	32%	39%	24%	5%	0%
When reading a book, comic book or a magazine	49%	34%	16%	1%	0%

Note. Because of rounding, percentages may not equal exactly 100%.

$p = .000$). Despite these statistically significant differences in interests and the frequencies in their attempts, there was no difference between boys' and girls' literacy development, with 22% of the girls and 20% boys being able to read in preschool.

DISCUSSION

Our findings indicate that Finnish preschool and first-grade children are quite frequent media users, and homes provide them with an environment that includes traditional media as well as newer technologies. Interestingly, parents reported more computers than televisions in their homes. Additionally, our data indicate that young Finnish children have televisions in their own rooms less often than their British or American peers. Marsh et al. (2005) reported that 29% of the British children aged 0 to 6 years in their study had their own televisions and Common Sense Media (2011) reported that 42% of 0- to 8-year-old children in the USA had a television. In contrast, we found that only 21% of Finnish children have their own televisions, which differs from Suoninen (2011), who reported that only 10% of children had a television in their own room. Similar to results from case studies (e.g., Valkonen et al., 2005) and Suoninen's survey (2011), our results indicate that the time spent watching television varied. Parents reported that 40% of the children watched television less than an hour a day and 12% of the children did not watch at all. A very small minority of preschool-age children (0.4% in the city and none in the rural areas) watched television more than 4 hours daily. The finding that there are more computers than televisions in homes, as well as variation in time spent watching television, could possibly be explained by the fact that the area has a large population of a religious group that does not accept television but does allow videos/DVDs, computers and the Internet. However, this possibility needs to be explored.

Based on our findings as well as previous research, playing electronic games and computer-based games is a common activity in Finland. Interestingly, our results indicate that preschool children play more games designed for learning while first graders play more entertainment games. This finding corresponds to Suoninen's (2011) finding that learning games were not as popular as entertainment games with first graders. Our results indicate that boys were more frequent game players than girls, as is evident in other studies as well (Ermi et al., 2005; Matikkala & Lahikainen, 2005; Suoninen, 2011). Some parents think that computer gaming is beneficial for children's learning (see Suoninen, 2011). However, this view might reflect an overemphasis on the potential benefits: A child's technical skills do not necessarily translate into learning skills in information and communication technology (ICT) contexts.

Finnish parents have not been ambitious to teach literacy to their children before school (Karvonen, 2005). However, several games have been designed to help prepare children for school by teaching, for instance, letters and their sounds. Parents may think that these games are useful specifically before school, but presume the school will take responsibility for teaching once the child enters first grade.

Parents noted that a high percentage of children could read at the start of first grade, indicating that children have learned to read during their preschool year or before. Our findings suggest that many activities at home can spark children's curiosity about learning literacy, such as using environmental print as a context for learning letters and other concepts of print.

Furthermore, our findings indicate that Finnish homes still reflect a reading culture that values print media. Although watching television is a common and frequent activity, especially among preschoolers, children also engage in reading several days of a week. The use of libraries is also frequent, as is the practice of reading bedtime stories. However, parents do not read as frequently to their first graders as to their preschool children. This finding might reflect some parents' belief that children do not need to be read to once they learn to read themselves.

The decrease in frequency of reading to first graders may be related to notion of children being expected to be independent at a young age in Finland. This expectation has been addressed in the media with regard to children staying at home alone after school, beginning in the first grade (Strandell & Forsberg, 2005). Perhaps being home alone after school is the reason for our finding a dramatic increase in the number of children with their own mobile phones, as preschoolers move to first grade. A similar finding was also observed in Suoninen's (2011) study. First graders need mobile phones to call their parents while they are on their own at home or in the neighborhood after school before their parents come from work.

Importantly, our results support the claim that newer technologies have not harmed literacy development, as has been debated (Schmidt et al., 2006), but may even support it (e.g., Karchmer et al., 2002). Literacy skill was found to develop well, with 77% of parents reporting that their first-grade child was able to read before the start of school. Moreover, the parents' reports showed no difference in the percentage of boys and girls who could read at the beginning of their preschool year, even though girls showed more interest in writing and were more engaged in writing activities than boys, while boys played more console and computer-based games (which may have included learning games). This lack of gender distinction at the beginning of the preschool year may indicate that involvement in print literacy is not more powerful than other media environments in learning to read. In fact, electronic media may motivate some children even more than printed texts. Such motivation, in turn, affords opportunities for children to learn literacy, provided that electronic media include print in a meaningful way from a child's point of view. But to explore this issue more ethnographic research is needed to investigate processes occurring in children's activities with media in formal and informal environments.

Evidence indicates, however, that Finnish first-grade classroom instruction has not taken into account children's developing competencies with newer technologies (Korkeamäki & Dreher, 2011), even though the national core curriculum for first and second grade states that (a) instruction should continue the learning that has begun at home, and (b) children's reading and writing skills, including media literacy and skills in ICTs, should be developed (National Board of Education, 2004). Moreover, even the use of children's trade books is rare in first-grade classrooms (Korkeamäki & Dreher, 2011). Preschool classrooms are even less well equipped with technology, such as computers and access to the Internet, than the classrooms in schools. Therefore, children's home environments are the primary source for learning media literacy skills. However, new technologies offer abundant resources that could enrich the curriculum so that it better matches children's interests and lives (e.g., Marsh, 2008). Also, the use of media and popular culture affords opportunities for facilitating children's development as critical users of media. Indeed, some children are very competent producers of digital texts and have posted their texts on the Internet before they enter school.

Our findings and the findings of other Finnish studies about children as frequent users of new technologies correspond to similar results in other countries, such as Britain (Ofcom,

2010) and the USA (Blanchard & Moore, 2010; Common Sense Media, 2011). However, despite such findings, some have argued that teachers do not take advantage of the literacy and technological skills young children bring to school with them (see Knobel, 2006). Researchers have suggested that since print-based texts have changed to screen-based, instruction should also reflect this change (e.g., Kress, 2003; Marsh, 2009). Because they involve new technologies (e.g., computers, console games, and mobile phones), multimodal texts and techno-literacy practices (Marsh, 2004) challenge teachers, even though words and letters on screen continue to be important (Marsh, 2009). Teachers and teacher educators need to address this challenge with more classroom research that investigates the usefulness of techno-literacy and how it might support the development of print literacy.

We recognize the limitations of our research. First, studies that examine media use are subject to the rapidly changing technology environment, and this study is no exception. New forms of technology have already emerged since we collected our data. For example, this study could not have specifically addressed forms of media that have appeared or increased in popularity after the data were collected (e.g., tablet computers, increasingly smarter phones). Although newer technologies could affect the results, a survey of Finnish children conducted after ours showed similar results (Suoninen, 2011), thus supporting our findings. Furthermore, the findings of Common Sense Media (2011) show that the newer technologies are not yet very common with young US children and that the time they spend with these devices is still very small compared to other media.

Another possible limitation of this study is that city preschool parents had a lower response rate (55%) compared to rural preschool parents (62%). As noted earlier, however, response rates for both groups were similar to the response rate in Marsh et al.'s (2005) study. In addition, although differential response rates could have affected the results, the evidence indicates few differences between rural and city results, suggesting that media culture is similar in both the city and rural areas.

CONCLUSION

Our study confirms the findings of several earlier case studies. But more importantly, our findings from 2006–2008 data parallel those of Suoninen's (2011) study with 2010 data that used similar methods. Because many of the items in Suoninen's and our surveys were quite similar, these two large-scale studies confirm that young Finnish children's use of technology at home is very frequent. Similar results have been found in studies in several countries (e.g., Common Sense Media, 2011; Ofcom, 2010). This trend, thus, presents a challenge to preschools and schools: Evidence indicates that instructional practices typically do not take advantage of young children's developing knowledge of diverse technologies (e.g., Korkeamäki & Dreher, 2011).

In addition to providing converging evidence of children's media use at home, our study also addressed children's literacy learning, an area that was not part of Suoninen's study. Our findings suggest that technology does not harm literacy development. However, we need more studies in relation to learning literacy and the use of technologies, specifically focusing on learning literacy both in formal and informal settings. In particular, research is needed on how teachers can build on the knowledge that many of today's young children already possess when they enter school.

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Appendix

QUESTIONNAIRE ABOUT PRESCHOOL AGE CHILDREN'S USE OF MEDIA¹

Background questions

- 1. Your gender**
 1. male
 2. female
- 2. Gender of your preschool age child**
 1. boy
 2. girl
- 3. Birth year of your preschool age child** _____
- 4. Your preschool age child has**
 1. a younger sibling / younger siblings
 2. an older sibling / older siblings
 3. both a younger sibling / siblings and an older sibling / siblings
 4. preschooler is the only child
- 5. Your professional education (if you are a student, choose your education according to your upcoming degree)**
 1. no professional education
 2. professional course or courses
 3. vocational school
 4. institute level education
 5. polytechnic degree
 6. academic qualification
- 6. Professional education of your spouse or partner (if he/she is a student, choose his/her education according to the upcoming degree)**
 1. no professional education
 2. professional course or courses
 3. vocational school
 4. institute level education
 5. polytechnic degree
 6. academic qualification
- 7. Which of the following options describes your work situation best?**
 1. day job
 2. shift work
 3. part-time job
 4. not working
- 8. Which of the following options describes your spouse or partner's work situation best?**
 1. day job
 2. shift work
 3. part-time job
 4. not working

¹ The survey was conducted in Finnish, and translated here by the researchers. The questionnaire for first graders was identical except that *preschool* was replaced by *first grade*.

9. In your opinion, your economic situation is

1. very good
2. good
3. satisfactory
4. difficult
5. very difficult

10. What language is primarily spoken in your family? _____

The following questions are related to the media equipment in your home.

11. Which of the following equipment is found at your home? You may select as many choices as needed.

Take into account only the equipment that is working and is in use.

1. television
2. VCR / DVD
3. telephone (also cell phones)
4. radio
5. stereo / CD player or tape player
6. computer (also laptops)
7. game console (PlayStation, X-Box, etc.)
8. video camera / digital video camera meant for shooting videos
9. digital camera
10. none of the above

12. Do any of your home computers have Internet connection?

1. yes
2. no

13. Which of the following equipment does your preschool age child have in his/her own or a shared room? You may select as many choices as needed.

1. television
2. VCR / DVD
3. radio
4. stereo / CD player or tape player
5. computer without Internet connection
6. computer with Internet connection
7. game console (PlayStation, X-Box, etc.)
8. none of the above

14. Does your child have his/her own cell phone?

1. yes
2. no

15. How many of the following does your preschool age child own or share with siblings? Choose the best answer for each row.

	0	1-10	11-20	21-30	31-40	over 40
books (picture books, storybooks, nonfiction books, coloring books, etc.)	1	2	3	4	5	6
videos / DVDs computer or console games	1	2	3	4	5	6
music recordings	1	2	3	4	5	6
fairy tale recordings	1	2	3	4	5	6

16. How many other books altogether are there in your house? (children's books not included)

1. 0-20
2. 21-50
3. 51-80
4. 81-100
5. 101-150
6. 151-200
7. more than 200

17. How many newspaper subscriptions are delivered to your home at the moment? _____ pcs.
18. How many magazine subscriptions for adults are delivered to your home at the moment? _____ pcs.
19. Are there some magazine subscriptions for your child? (also magazine subscriptions for siblings to share?) How many? _____ pcs.
20. How often do you buy newspapers or magazines as newsstand copies?
1. almost every day
 2. 2-4 times a week
 3. about once a week
 4. less than once a week
 5. never
21. How many computer games designed to support learning do you have in your household?
1. 11 or more
 2. 5-10
 3. 2-4
 4. 1
 5. don't know
 6. none

The following questions are related to your preschool age child's use of media

22. How often does your child do the following activities? Choose one option for each row.

	6-7 days a week	4-5 days a week	2-3 days a week	once a week	less than once a week	never
watches TV	1	2	3	4	5	6
watches video / DVD	1	2	3	4	5	6
listens to the stereo	1	2	3	4	5	6
listens to the radio	1	2	3	4	5	6
uses the computer	1	2	3	4	5	6
plays with the game console	1	2	3	4	5	6
reads or scans books, comics or magazines	1	2	3	4	5	6
uses cell phone (e.g., for playing or calling; not necessarily his/her own)	1	2	3	4	5	6

23. How much time, on average, does your preschool age child use the following activities per day?
Choose one option for each row.

	more than 4 hours	3-4 hours	1-2 hours	from half an hour to an hour	less than half an hour	never
watching TV	1	2	3	4	5	6
watching video / DVD	1	2	3	4	5	6
listening to the stereo	1	2	3	4	5	6
listening to the radio	1	2	3	4	5	6
using the computer	1	2	3	4	5	6
playing with a game console	1	2	3	4	5	6
scanning or reading books, comics or magazines	1	2	3	4	5	6

24. Books, magazines, comic books, etc., are read to the child ...

1. many times a day
2. at least once a day
3. many times a week
4. about once a week or less
5. hardly ever

25. How old was your child when you began to read to or look at picture books with him/her?

1. under 6 months old
2. 6 months – 1 year old
3. 1-2 years old
4. 2-3 years old
5. 3-4 years old
6. 5-6 years old
7. don't know
8. child is not being read to

26. Your child is read to ...

	almost always	often	sometimes	never
when going to bed	1	2	3	4
when he/she wants and some adult has time	1	2	3	4
in other situations, when?	1	2	3	4

27. How often do you go to the library?

	once or more a week	2-3 times a month	once a month	very rarely	never
father / mother	1	2	3	4	5
preschool age child	1	2	3	4	5

28. What do you borrow from the library for your preschool age child?

	almost always	often	sometimes	rarely	never
books	1	2	3	4	5
magazines	1	2	3	4	5
videos / DVDs	1	2	3	4	5
computer or console games	1	2	3	4	5
fairy tale recordings	1	2	3	4	5
music	1	2	3	4	5

29. How often does one of the parents do the following activities together with your preschool age child?

	every day	2-6 times a week	once a week	less than once a week	never
watches TV	1	2	3	4	5
watches video / DVD	1	2	3	4	5
uses the computer or game console	1	2	3	4	5
reads a book, comics or magazines	1	2	3	4	5
listens to music or fairy tale recordings	1	2	3	4	5
listens to the radio	1	2	3	4	5
participates in his / her games	1	2	3	4	5
participates in his /her hobby activities	1	2	3	4	5

30. With whom does your child usually

	with friends	with siblings	with parents	with someone else	alone	doesn't do this
watch TV	1	2	3	4	5	6
watch video / DVD	1	2	3	4	5	6
listen to music or fairy tale recordings	1	2	3	4	5	6
listen to the radio	1	2	3	4	5	6
play with game consoles	1	2	3	4	5	6
use the computer	1	2	3	4	5	6
surf online	1	2	3	4	5	6

31. What does your child do with the computer?

	almost always	often	sometimes	rarely	never
plays computer games designed to support learning	1	2	3	4	5
plays other computer games	1	2	3	4	5
listens to music	1	2	3	4	5
watches movies	1	2	3	4	5
draws with a drawing program	1	2	3	4	5
surfs on the Internet	1	2	3	4	5
uses a word processor	1	2	3	4	5
discusses with friends (e.g., in Messenger)	1	2	3	4	5
reads and writes emails	1	2	3	4	5
something else, what?	1	2	3	4	5

32. Think back; at what age did your child first do each of the following?

	less than 1 year	1-2 years	3-4 years	5-6 years	don't know	child doesn't do this
watched TV	1	2	3	4	5	6
watched videos / DVDs	1	2	3	4	5	6
listened to the radio	1	2	3	4	5	6
listened to the stereo	1	2	3	4	5	6
used the computer	1	2	3	4	5	6
played with a game console	1	2	3	4	5	6
used a telephone / cell phone	1	2	3	4	5	6

In the last section, the questions are related to your child's attitudes towards written language.

33. How many letters of the alphabet does your child know?

1. none
2. few
3. about a half
4. almost all
5. all

34. Can your child read?

1. yes
2. no
3. don't know

35. If your child can already read, at what age was he/she when he/she learned to read?

1. 2 years or less
2. 3 years
3. 4 years
4. 5 years
5. 6 years

36. Is your child interested in finding out what is written, for example, in the texts on television, in the ads coming home or in shop windows or signs? Choose one option that describes your child the best.

1. doesn't ask
2. asks what it says in them
3. tries to recognize or read letters from them by him/herself

37. How interested is the child to find out about the printed text in the following situations?

	very interested	quite interested	a bit interested	not interested	don't know
text on television	1	2	3	4	5
texts of different magazines	1	2	3	4	5
ads coming at home	1	2	3	4	5
shop signs, road signs, etc.	1	2	3	4	5
other texts at home (e.g., on a milk carton)	1	2	3	4	5
when reading a book, comic book or a magazine	1	2	3	4	5

38. How often does your child write or pretend to write text?

1. every day
2. 2-6 times a week
3. about once a week
4. rarely
5. never

39. Is your child interested in writing?

1. very interested
2. quite interested
3. a bit interested
4. not interested
5. don't know

40. Your child recognizes words ... (Choose all that apply.)

1. based on familiar letters
2. based on color or shape
3. child can already read
4. don't know

Thank you very much for your answers!