New Generations – New Media

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Why another study? Indeed, why a study about studies? Any why now?

Because of questions like these, the Markle Foundation set out to discover how much we grown-ups really know about growing-up digital. And the startling answer from experts in the field is: very little. In fact, there are far more questions than there are answers about what computer and video games and Internet use mean to the social, intellectual and physical development of children today. As a result, we risk losing an extraordinary opportunity to help shape a robust environment that rewards editorial quality and educational value – an environment in which new media producers can thrive by understanding children as more than just a commercial market.

We all share a powerful interest in finding out more: Children's content developers who could learn more about how to create engaging, educational interactive experiences; parents who could learn more about what media products might be helpful or even harmful to their children; policymakers and advocates who could build future policies on a firm foundation of empirical knowledge; and finally, researchers themselves, who might learn a great deal more by bringing together across academic disciplines work that often goes forward on autonomous tracks.

In a 200 page review, my colleagues and I examine the extant literature in a discussion of existing research on children and interactive media.

The report focuses on how children use emerging communications media – video games, CD-ROMs, the Internet and other computer software – outside the classroom, in their homes. It is organized into four sections: (1) interactive media use and access; and its impact on children's (2) cognitive development, (3) social development, and (4) health and safety. Finally, we have a series of questions and proposals rooted in the understanding that the medium alone is not the message; that creative ideas and human values will ultimately determine whether communications technologies fulfill their enormous potential to educate, inform and inspire.

I want to recognize my colleague for their contribution to this review. Barbara O'Keefe from Northwestern University and Ronda Scantlin from the University of Pennsylvania and I worked diligently to produce this review which I will attempt to summarize this morning.

I can't review it all here, but here are some tidbits.

Today we are in the middle of a new revolution in both technology and culture; a revolution in which our children are often in the vanguard. For they are the first generation that is truly "growing up digital." In 2000, among American households with children ages 2-17, 70% have computers and 52% are connected to the Internet (Woodard and Gridina, 2000).

The typical American child lives in a household with 3 television sets, 2 VCRs, 3 radios, 3 tape players, 2 CD players, a video game player, and a computer (Kaiser Study, 1999).

Of course, interactive media for young people is not entirely new. Video games were introduced more than two decades ago – digital content explosion (huge growth and technological sophistication) In recent years – home computing more affordable, expansion of Internet and high-speed connections, etc. – lead to increased value and use of interactive media

Concerned parents, teachers, content producers, child advocates and policy-makers want to understand much more about how such a pervasive experience can contribute to – or at very least, not detract from – our children's intellectual, social and physical development. We sense that, because of their unique properties, well designed interactive media have an extraordinary potential to not only help young people learn, but also engender a true love of learning. At the same time, our experience with television suggests that digital content may also have potential to affect children's social and intellectual development in far less desirable ways.

But are our assumptions borne out by the facts? What kind of evidence do we already have about the power of digital media to influence children's health and well being? What sort of new research do we need to better understand the role of these media in children's lives? And how can we as researchers, media producers, policy-makers and parents better shape that role from knowing the answers?

Figure 1. *Average Daily Minutes Children Spent with Media by Age*
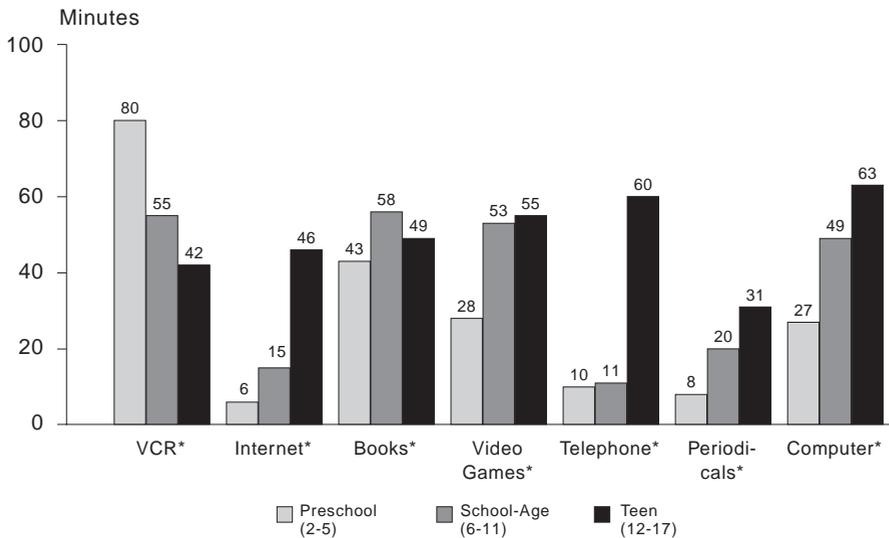
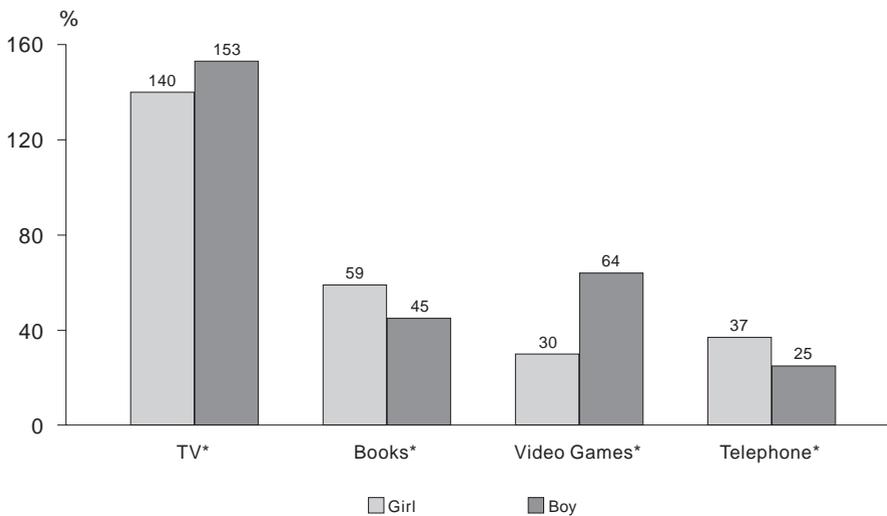* Differences significant at the p<.05 level.

Source: Woodard and Gridina (2000).

Children who are heavier television viewers are heavier media users overall. Children who spend more than two hours watching television daily also spend significantly more time watching videotapes, playing video games, and talking on the telephone. There are no statistically significant differences in time spent using the computer, browsing the Internet, reading books or periodicals by the amount of time the child spent with television.

Media use varied among children of different ages. There are statistically significant differences in media use across all of the media except television viewing. Preschoolers spend the most time watching videotapes, elementary school age children spend the most time reading books, and adolescents spend the most time using the Internet, playing video games, talking on the telephone, reading periodicals, and generally using the computer.

(Directly quoted from *Media in the Home 2000* – Annenberg Study)

Figure 2.   Average Daily Minutes Children Spent with Media by Gender

* Differences significant at the p<.05 level.

Source: Woodard and Gridina (2000).

The gender of the child corresponds with the use of several media. Boys spend more time watching television and playing video games while girls spend significantly more time reading books and talking on the telephone. There are no significant gender differences in Internet or computer use.

(Directly quoted from *Media in the Home 2000* – Annenberg Study)

Interactive Media Use and Access

Researchers have found that playing games is the most common way young people of all ages 2–18 use computers.

Boys reported significantly more time commitment than girls in playing computer and video games. Wright et al. (in press) found boys spent significantly more time per week playing sports games than girls (boys = 62.43 min; girls = 7.54 min).

Boys generally preferring sports, action adventure and violent action games; while girls generally prefer educational, puzzle, spatial relation and fantasy-adventure games. What's more a March 2000 survey by the National School Boards Foundation (NSBF) found that boys & girls are equally involved in using the Internet, albeit in different ways. Girls were more likely to use the Internet for education, schoolwork, e-mail, & chat rooms, while boys were more likely to use the Internet for entertainment & games.

However, research indicates that interactive gaming decreases with age, from 5.6 hours per week to 2.5 hours per week from fourth to eigth-grade for girls, and from 9.4 hours per week to 5 hours per week for boys at the same grade levels (Buchman and Funk, 1996).

Preference for educational games also decreased as a function of age for both girls and boys. Younger children were more likely to prefer educational games than older children (Buchman and Funk, 1996). This preference for educational games decreased as a function of age for both girls and boys alike.

But there are several gaps in our knowledge about age and new media use. For example, there is little research exploring variations in interactive media use among children of different ethnic groups and among children less than eight years old. We are especially limited in our understanding of how and why children use networked services from their homes.

Figure 3. Percentage of Home Computers and Internet Penetration by Income
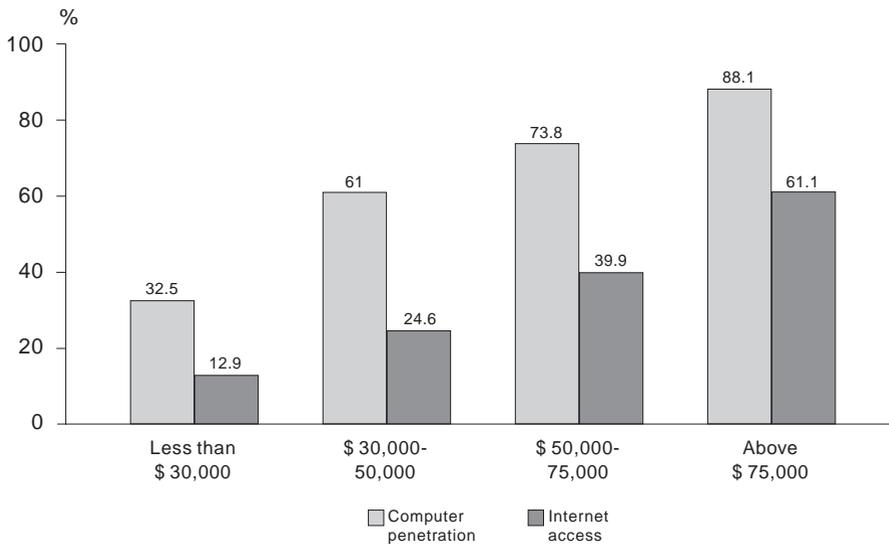

Source: Stanger and Jamieson (1998).

Not every American family and child has access to computers, the Internet and interactive media. Persistent differences across socio-economic and ethnic lines have rightly generated an important public policy debate about possible implications and solutions to this inequality.

Stanger and Jamieson (1998) reported 32.5% of families with annual household incomes below $30,000 reported owning a home computer, while 61% of those between $30,000 and $50,000, 73.8% between $50,000 and $75,000, and 88.1% above $75,000

reported home computer ownership. Online access for families in each income level was 12.9%, 24.6%, 39.9%, and 61.1%, respectively (Stanger & Jamieson, 1998).

Figure 4. Percentage of Home Computers and Internet Penetration by Ethnicity
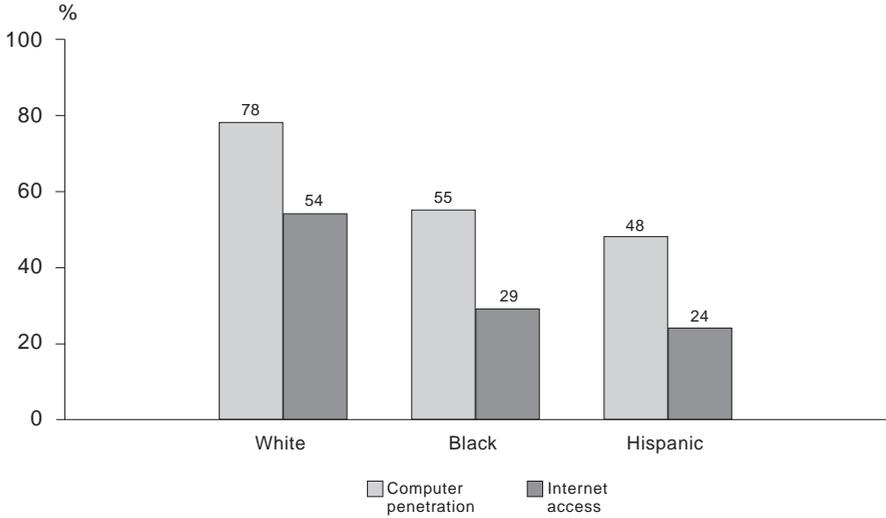
Source: Kaiser Family Foundation (1999).

Furthermore, Seventy-eight percent (78%) of White youth came from homes with at least one computer, which is considerably more than African American (55%) or Hispanic (48%) youth (Roberts et al., 1999).

But the most recent research suggests that access to computers and the Internet is rapidly spreading in the United States and that closing the "digital divide" will depend less on technology and more on providing the skills and content that are most beneficial.

For example, video game consoles and software, which are less expensive than computer systems, are widely spread across all socio-economic levels. In fact, ownership of video game equipment was more common in lower-income households than in higher-income households. Unfortunately, even though similar *entertainment* content is available for both computer and video gaming systems, the vast majority of *educational* software is available only for those who have access to a computer or perhaps a net appliance.

Research indicates that children who own or have access to home computers demonstrate more positive attitudes toward computers, show more enthusiasm, and report more self-confidence and ease when using computers than those who do not have a computer in the home.

Furthermore, Hoffman and Novak (1999) report that individuals who own a home computer are much more likely than others to use the Web.

However, ownership does not mean effective use, and it may be a lack of knowledge and experience that are the real barriers to using computers.

We need to know whether and how children may be affected by living on the wrong side of the "digital tracks." Our specific concern focuses less on the details of a "digital

divide" and more on what children learn from the interactive content they do experience – that is, on how the marriage of content and the use of technology affects children.

Much of the research on children's use of media has focused on the uses of *particular* media (e.g., books, television, computers, Internet) and not on the whole media environment. The literature on print literacy has virtually no overlap with the literature on children and television, and these in turn have little connection with literature on children and computers. While this may have been a useful simplifying strategy in the past, it appears increasingly less useful in an age of media convergence, when children are surrounded by an increasingly seamless web of multiple media experiences.

Future research needs to study not just the level of media use, but specific media content and its various platforms. For instance, rather than just studying children's use of the Internet, we should consider the genre of the content involved, the kind of interaction it provides; whether it uses audio, text, or audiovisual messages; and whether the user is involved in networked activities and how children use these experiences in their social lives.

Overarching Theoretical Approach

The core concern of research on children's exposure to, and use of, media has been with the effects of media on their learning and social development, in short, with the role of media in socialization. Socialization is the process of acquiring roles and the knowledge and skills needed to enact them. One important framework for understanding the role of media in socialization is grounded in thinking about the nature of language socialization (Schieffelin & Ochs, 1986), the nature of education and learning (Pea, 1994), mind, self, and society (Mead, 1934), cognitive development (Piaget, 1964), social cognitive development (Vygotsky, 1962) and dialogue (Bakhtin, 1990).

Within a media socialization perspective, the core socializing process is dialogue. Dialogue, an interchange with a human or mediated interlocutor, creates a structure for children to articulate and organize their emerging understandings as well as build on what others communicate to them (Wartella, et al., 2000). Dialogue is a relational idea, referring to the ways in which attention and mental activity are engaged and structured by the presence and presentations of others.

Theories of dialogue, especially the work of Bakhtin (1990) and Goffman (1981), provide a framework within which to understand the role of communication and social interaction in learning. In their work, two concepts are critical to a theory of dialogue: interaction and identity.

Dialogue is an activity involving at least two agents, and it is carried out through a process of *interaction* (Jonassen, 1988). In its simplest form, interaction is an exchange of actions or ideas that build on previous exchanges (Rafaeli, 1988). A medium is interactive, then, when it creates the possibility of dialogue, i.e., gesture and response.

We can define the quality of interactivity in media as their ability to sustain a rich conversation of gestures. In this sense, interactivity is a function of the range/multimodality of display possiblities, the nature of response options (and especially the degree of synchronous responding that is possible), and the ability to sustain a chain of interaction. Following Wartella et al. (2000), Wartella and Jennings (2000) and Sims (1997), we hypothesize that interactivity fosters children's engagement with content and consequent learning due to: (1) control over the learning environment (the degree to which

children's actions make things happen); (2) responsiveness (contingent replies to children's actions); (3) production values (system performance, aesthetic qualities, and video and audio quality); and (4) personal involvement with the content (motivational elements that inspire children to participate in certain activities).

Identity refers to the social self, as constituted and negotiated within particular activities and contexts. It incorporates and builds on an understanding of personhood and agency and guides not only the ways in which people organize their actions but also the ways in which they interpret the actions of others, including non-human others (e.g., Reeves and Nass, 1996).

There has been a good deal of attention already to the ways in which children and adolescents explore their sense of self via online interaction with others. Examples include Turkle's (1995) research on adolescent's adoption of characters in MUD's (multi-user role-playing games) and Gross, Juvoen, and Gable's (in press) study of the use of email and Instant Messaging to build identities and relationships with peers. Our surveys of children's use of online technologies for communication with significant others will contribute systematic, empirical data to help us understand how media contribute to a child's emerging sense of self and relationship.

However, what remains to be explored is how children develop and use a sense of their own agency and the agency of others to frame their experiences with interactive media. This is a more fundamental question about the ways in which the presentation of content shapes its acquisition and impact. In particular, we need to know whether there are differences in the way information is received from or given to different kinds of dialogue partners, including real people, fictional characters, computers, and intelligent computer agents.

Cognitive Development

We have long understood that children learn and grow, socially, intellectually and even physically from playing games. They also learn skills, information and behavior from their parents, siblings and peers; from television, music, movies and comic books. But how much do we understand about whether the introduction of interactive media into the equation affects how and what children are learning? Is the very interactivity of newer technology a distinction that makes a real difference in what children learn? In simple terms, does playing collaborative learning games make children more likely to act collaboratively? Or playing violent video games make children more likely to act violently?

And as prior media research has shown, it is not the medium itself that affects children's perceptions, attitudes, or awareness. It all depends on the specific kinds of *content* with which they carry out specific kinds of *activities*, under specific kinds of external or internal *conditions* for specific kinds of *goals.*

For example, in research on what children learn from playing video games, skill gained in learning to play a video game generalized to very closely related visual and spatial reasoning tasks (Subrahmanyam & Greenfield, 1996; Okagaki & Frensch, 1996) but not to less closely related tasks (Greenfield, Brannon, & Lohr, 1996).

In order to understand the impact of interactive media, researchers will have to focus on the details of that interactivity, on whether and how it allows children to engage the content in a truly responsive way.

Findings

We know that in a traditional "analog" environment, interactivity in the form of collaboration is a proven learning strategy. Studies have shown, for example, that children's communication with peers about how to solve a science problem can improve science learning. Others demonstrate that stimulating collaboration in young children's storytelling play lead to improved writing skills. In another study examining collaborative learning in 4th grade children using an educational software program showed that pairs of children who could play together got more right answers than the pairs who had to play against one another (Strommen, 1993). Other findings provide encouraging evidence that informal, collaborative experiences with quality educational software can help develop skills that are not only content-specific, but that can also be transferred to new situations.

In general, research suggests that where interactive video games have been designed to teach certain skills, they can be highly effective learning tools. But there has not been enough research on games that are already in the marketplace to determine what their effect is on other cognitive skills. And until there is more research, we simply don't know enough to say whether children's access to and use of computers at home significantly influences their achievement in school. While early studies have suggested that home computer access may be associated with higher test scores, a variety of other factors in the home and family environment could also be relevant.

In relation to academic achievement, home computer use & the ways in which computers are used can be attributed to several forms of social inequality beyond access (gender, SES, & ethnicity) which may subsequently influence the educational benefits derived from home computing.

One possible explanation for these findings is the level of parental involvement in children's computing activities. Children who engage in beneficial computing activities have parents who interact with them or communicate about those computing activities.

Given the fact that the primary reason cited by parents for purchasing a home computer and connecting to the Internet is education, we have very little research to document whether using interactive media at home actually contributes to achievement at school.

Social Development

A decade before the first digital computer was conceived, Margaret Mead pointed out that playing games provides a critical opportunity for children to acquire the distinctive perspectives of social identities and voices. And more recent research has shown that children's fantasy play – like having an "imaginary friend" – can be a productive strategy in their own social development.

Some researchers suggest that online interaction through chat rooms and game-playing can have a similar function, allowing young people to take on identities they wish to explore and even helping them deal with difficult issues in their "real" lives. Conversely, some young people may use these media to "act out" in hostile or unhelpful ways both online and off. While a few studies have examined the formation of online personal relationships and their ability to satisfy social needs of adults, we know much less about the nature of those relationships, particularly for children and teenagers.

Online communications lack many of the characteristics of traditional relationships such as geographic proximity and physical appearance, cues about group membership and the broader social context. But the very absence of some of these qualities in online

communication may have great advantages, especially for children and teens. The emphasis on shared interests rather than social or physical characteristics can be empowering for all people, and especially for members of disadvantaged social groups, those who may be geographically isolated, or physically disabled. One extraordinary example of this is the *Junior Summit*, an online community of children from 139 different countries.

Can the Internet enable awkward teens to find social niches that might otherwise elude them in their real world? Or may it lead them to withdraw and become isolated? (Certainly, parents also have legitimate safety concerns about child predators who seek to have socially inappropriate interactions with children both online and off.) In short, we have much more to learn about consequences – both positive and negative – of networked relationships and communities for children's healthy social development.

Interactive environments, particularly networked technologies can have a positive influence on social behaviors and intellectual development. There has, for example, been a popular – but still understudied – boom in communities of young media users who create their own web pages. Such personal online publishing offers a sophisticated way for young people to connect with their peers and others interested in the same topics. And many are seizing that opportunity with enthusiasm and creativity.

But the use of interactive technologies is not necessarily an isolating event for young people. For many, it has become an important social activity. Recent research with children and families suggests that rather than being isolating, the Internet helps connect children (and parents) to others.

36% of the adolescents who played video games reported playing them with peers or siblings (KFF, 1999).

Interactional skills, verbal facility, social identity formation, and group adjustment (particularly for the boys) were all positively associated with computer activity (Orleans & Laney, 2000).

History of concern about violence and media, but does the interactive, repetitive nature of electronic games have a different role than traditional media?

First, identification with aggressive characters, particularly in games that allow children to not only choose their character but also select particular traits. Second, game players are active participants whose own behaviors lead to success or failure. Third, children receive constant reinforcement of aggressive choices by acting them out, and then being rewarded (with points, sound effects and access to new game levels) for doing so.

Theoretically, these qualities should increase the power of interactive games to teach and reinforce aggressive behavior. But there is only recent and very limited empirical evidence to substantiate this claim.

Short-Term Impact of Violent Video Game Play

1) children from 4–10 years old's – research suggests that playing violent video games encourages relatively immediate increases in aggressive behavior, attitudes and thoughts

2) One recent study examined the effect on 3rd and 4th grader's after playing a violent video game (*Mortal Kombat II*) or non-violent one (*NBA Jam:TE*). Steps were taken to "rig" the *Mortal Kombat II* game so that the young subjects would not experience its graphic violence in full; for example, no mutilation moves or spurting blood. Even

relatively brief exposure to this "tamed-down" version of the game elicited aggressive responses by the children

Long-Term Impact (very little evidence)

There has been little systematic research on the long-term influences of interactive game play, and especially limited attention given to young children. Need for more research

Ratings:

ESRB: Started in 1994, the U.S. Congress required the computer and video game industries to develop some type of parental advisory label to be placed on game packaging. Entertainment Software Rating Board labeled game content based on five age-based categories: Early Childhood (EC), Everyone (E or K-A), Teen (T), Mature (M), and Adults Only (AO). There may also be specific content descriptors like mild animated violence, realistic violence, mild language, and suggestive themes.

RSAC: Recreational Software Advisory Committee, now reconceived as the Internet Content Rating Association, derived from manufacturers' responses to a series of questions about violence, nudity, sex, and offensive language. Classification icons on game packaging or in advertisements appear as thermometers with four "temperature" readings. The temperature readings represent the level of intensity for these four behavioral categories and may also be accompanied by content descriptors.

Do ratings really provide useful information? Do parents even pay attention to them?

Of the thousands of products rated by the ESRB, 71% of those products are rated "E" for everyone. That one category can include everything from games that provide challenging, skill-building adventures to those that include violence or other undesirable content raises serious questions about the usefulness of such ratings. At the same time, researchers, parents, children, and commercial game raters have very different definitions of violent content, especially cartoon-type or fantasy violence.

Parents evaluations of game content were more strict than industry ratings (Walsh, 1999).

In any event, there is little evidence that parents even use these rating systems when making purchases. Surveys indicate that after the first two years of being in effect, consumer awareness and use of the ratings was extremely low (Fallas, 1996).

Health and Safety

Interactive media have the potential to promote health and positive behaviors. Approximately 17 million consumers use the Internet to search for medical and health information (Vozenilek, 1998), and that number has likely increased. Due to the recent growth in Internet use to obtain this type of information in homes, libraries, and community centers, it is important for professionals to be aware of these sources and validate the accuracy of the information available to the public. Hertzler, Young, Baum, Lawson, and Penn-Marshall (1999) recently identified and evaluated Internet sites providing nutrition and exercise information for children. The exercise demonstrated that there are a number of reputable sites providing nutrition and exercise information relevant for children (e.g., *FDA Kids Home Page*, *The Kids Food Cyberclub*, and *The Pyramid Tracker*); however, keyword searches will often identify sites that are not useful or relevant.

Interactive media, both online and off, has demonstrated an extraordinary potential to help children live healthier, safer lives. Interactive programs such as the *Life Adventure Series: Diabetes CD-ROM* or *Starbright Explorer Series: Exploring your Incredible Blood* are extraordinarily effective tools for helping children understand and manage their health conditions, and are developmentally appropriate tools for children to better understand their medical treatment (Bearison & Brown, 2000).

Click Health's action-adventure computer and video games – like *Bronkie the Bronchiasaurus* for asthma or *Packy & Marlon* for diabetes – demonstrably improve children's self-care for chronic illness. A clinical trial of *Packy & Marlon* found that diabetic children and adolescents who had access to the game at home for six months experienced a 77-percent decrease in diabetes-related emergency and urgent care clinical visits, compared to a control group of youngsters who had an entertainment game at home

Description of Bronkie

For example, in the asthma self-management game *Bronkie the Bronchiasaurus* players must make sure that dinosaurs Bronkie and Trakie, who have asthma, take their daily asthma medicine; avoid contact with environmental asthma triggers such as dust, pollen, smoke, furry animals, and sneezer characters who emit cold viruses; and use emergency medicine or sick-day medicine when their peak flow (breath strength) goes down. To win the game players must make sure their character carries out daily asthma selfcare and keeps peak flow high, throughout dozens of simulated days. Research has found that players then transfer to their own daily lives the selfcare skills and habits they learned in the game (Lieberman, 1997).

Description of Packy and Marlon

Another example of how interactive media can aid children's health care needs is the *Click Health* diabetes self-management game, called *Packy & Marlon*. The game uses the character's blood glucose level as one of the game goals. Players must balance the character's intake of food and insulin throughout several simulated days in order to keep blood glucose in the OK zone, neither too high nor too low. When blood glucose strays too far from the OK zone, the character must remedy the situation or else will not be robust enough to meet other game challenges and will therefore be more likely to lose the game.

In addition to offering rehearsal in a simulated environment, *Click Health* games improve health behavior by providing (1) attractive role-model characters who demonstrate desirable selfcare behaviors and help de-stigmatize those behaviors for children who are afraid of being different from their peers (Lieberman, 1997); (2) customizable selfcare regimens so that the character will be using a daily regimen that is most similar to the player's; (3) dynamic databases that allow players to look up essential health-related information to help them win the game; (4) supportive and informative performance feedback and unlimited opportunities for rehearsal of skills, to foster in players a stronger sense of self-efficacy (see Bandura, 1997) for health behaviors rehearsed in the game; (5) cumulative records of the characters' health status; and (6) two-player options that foster communication about the health topic with friends, family, and caregivers.

Life Skills Training

While not part of our report, I have recently become aware of a software program called *Ripple Effects* that teaches life skills and coping behaviors to children and adolescents. The program targets issues that youth encounter in their everyday lives, including violence, substance use and abuse, depression, bullying, and character education.

Areas of Concern

Physical Effects. Many adults who work constantly with computers have experienced a range of physical and ergonomic problems, from eyestrain to Carpal Tunnel Syndrome. But could the mouse and joystick prove to be as dangerous to young wrists as the curve ball proved to be on young Little Leaguers or repetitive workouts for young gymnasts? There is little existing research on how interactive media can affect children's physical health and development. Although many adults have experienced physical ailments from excessive computing, little research has been conducted relating to children's physical health and development and computing.

Addiction. A 1995 survey of 868 adolescents found that 50%, the majority of whom were boys, reported behaviors that would score high on an addiction scale. They reported playing on six or more days per week, playing for more than one hour at a time, feeling they play longer than intended, and neglecting homework to play. Other researchers, using criteria similar to those for pathological gambling, found that of 387 teens between 12 and 16 years-old, 20% were currently dependent on game playing and 25% had been so at some point in their lives.

Weight and Lifestyle. American children are more over-weight, slower and weaker than their counterparts in other developed nations and seem to be developing sedentary lifestyles at an earlier age. It may be that interactive game use and television viewing are displacing involvement in sport and other physical activity. While amount of television watching seems to predict whether children may be overweight, viewing behavior has not been shown to cause decreases in physical activity. Surprisingly, we found no published research exploring causal relationships between interactive media use and obesity. Only future research can tell us whether there is a connection between how much children watch TV or play interactive games and other sedentary behaviors that can affect their long-term health.

On-line Advertising and Privacy

Online privacy is developing into a major public policy issue as more and more Americans spend their time and money on the Internet. From advertisers whose "cookies" silently track surfing behavior to the potential for disabling viruses and credit card fraud, computer privacy and security presents a range of sensitive new issues. Questions of privacy and deceptive online advertising are especially significant with respect to children.

Web sites often ask children and adults alike to provide personal information such as name, age, gender and e-mail address. Researchers have found that children and teenagers ages 10-17 are much more likely than parents to say it is OK to give sensitive information to commercial Web sites in exchange for a free gift.

We don't know much about how children perceive advertisements on the Internet, although past research on television suggests that a great deal depends on age. But un-

like television and print media, online advertising is often subtly integrated within the content itself. Entire web sites provide an opportunity for children to interact with product brands and characters. A small exploratory study suggests that even children 9 – 11 years may not be aware of the commercial intentions of many web sites.

In 1998, Congress recognized the need to regulate online marketing to children and passed the Children's Online Privacy Protection Act (COPPA), which provides safeguards against the collection of personal information from children under age 13. COPPA authorizes the Federal Trade Commission to develop and enforce data collection rules for commercial Web sites targeted at children, and requires advertisers to disclose how they collect and use such data.

NYTimes Article

Children and the Web – In another First Amendment case, the justices today accepted an appeal by the Bush administration and agreed to decide the constitutionality of a federal law barring the use of the Web for "commercial purposes" in a way that makes sexually explicit material that is "harmful to minors" available to those under 17.

In a ruling last year, the Third Circuit barred enforcement of the Child Online Protection Act on the ground that the 1998 law's reliance on "contemporary community standards" to identify harmful material placed an impermissible burden on the operators of Web sites. "The Web is not geographically contained," the appeals court said, and once material is published on the Web it is available all over the world.

The law was Congress's response to the Supreme Court's invalidation of the Communications Decency Act of 1996, a less precise legislative attempt at the same goal. The American Civil Liberties Union and a coalition of booksellers and Web publishers argue that the new version has the same constitutional flaws.

A Research Agenda for Quality Interactive Media

We believe that the content industry, academic and market researchers, producers and parents, advocates and policy-makers all share an interest in doing the kind of research that can result in high-quality interactive media that provides not only successful, engaging entertainment, but also promotes healthy, happy and better educated children. To that end, we propose a potential national research agenda that includes:

Building common ground among researchers – benefit from collaboration among scholars in different fields and between academic and market researchers

Research that is Useful to Content Producers

- Provide funding to support developmentally based research on the uses, design, and effects of interactive media;

- Create a multidisciplinary research infrastructure that will provide a diverse pool of scholars the opportunity to study new media and children's issues systematically;

- Facilitate the exchange of ideas among a community of scholars, educators, and producers so they can translate current knowledge into entertaining and educational interactive media products for children;
  - Sponsor regular multi-disciplinary & multi-industry conferences generating high profile, peer-reviewed publications of academic and industry-based research.

   – Disseminate research findings and, in clear, understandable language, interpreting the practical implications for parents, educators, children's media producers, policy-makers & the press.

Conclusion

We know we can help foster an enlightened and successful generation of interactive producers and products through research on children that is developmentally based, multidisciplinary, cumulative, useful to content developers and responsive to the concerns of the public and policy-makers. But we cannot do so without first understanding much more than we do today about how these new media affect children – their thoughts, emotions, social relationships, and even their health. By generating an ongoing flow of credible, useful, systematic research, we can profoundly affect the lives and futures of next generation of Americans who are "growing up digital." We believe producers who know their audience better through research 1) will be more successful at targeting their program to reach that audience and 2) will better address children's developmental growth needs and interests.

   I invite you to visit www.markle.org to read what we do know about interactive media's influence on children and I hope you will find it of interest.