Current Research on Children and the Media

Digital Television:
Sharpening the Focus on Children

Since the first television set was introduced in the 1930s, innovations in technology have dramatically changed the way people watch television. From black-and-white to color, and low-definition to high-definition, television has come a long way. The newest transformation is the introduction of digital television. With features such as interactive program guides, Internet services and enhanced audio and visual quality, digital television offers viewers a richer television experience than ever before.

This new technology comes at a time when children of all ages are heavy media consumers. According to the Kaiser Family Foundation, children ages 8 years and older consume three and a quarter hours of television daily[1]; children who use computers spend close to an hour and a half daily.[2] Even children under the age of six are immersed in media, spending close to two hours a day watching television, using computers and playing video games.[3] In the digital environment, children will soon be able to view television and access the Internet from the same platform with the simple click of a mouse. Young viewers will be able to link to the Internet during a television show to access information about the program, surf a Web site or even purchase merchandise.

As television transitions from analog to digital, questions arise as to how to best meet the needs of children. *What are the potential benefits of digital television? How can the technology be used to serve children and families, while at the same time protect them from possible harm?* The transition to digital television offers a unique opportunity to shape how this new technology can serve our nation's children. This issue of Media Now focuses on digital television and its implications for kids and the programming designed for them.

Putting Kids First in a Digital World

Educational/Informational Programming

Despite the amount of time children spend watching television, they have limited options for educational programming. Numerous research studies have shown that exposure to educational television can have positive effects on the social, intellectual and educational development of young children. For example, one study found that preschool-aged children who regularly viewed educational

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What Is DTV?

In 1997, the federal government allocated an additional six megahertz of bandwidth to every television broadcaster as part of a digital spectrum giveaway valued at approximately $70 billion.[4] This authorization was the first step in a comprehensive plan to convert the United States to a digital television (DTV) system.

Digital television is a broadcasting technology that offers viewers sharper picture and enhanced sound quality compared to existing analog television by transmitting large quantities of data in compact form, just like in personal computers, compact disc players and the Internet.

Enhanced Audio/Video Quality

DTV provides CD-quality 5.1 Dolby Digital surround sound, immersing the audience with audio similar to a theater or cineplex.

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What Is DTV? *continued from page 1*

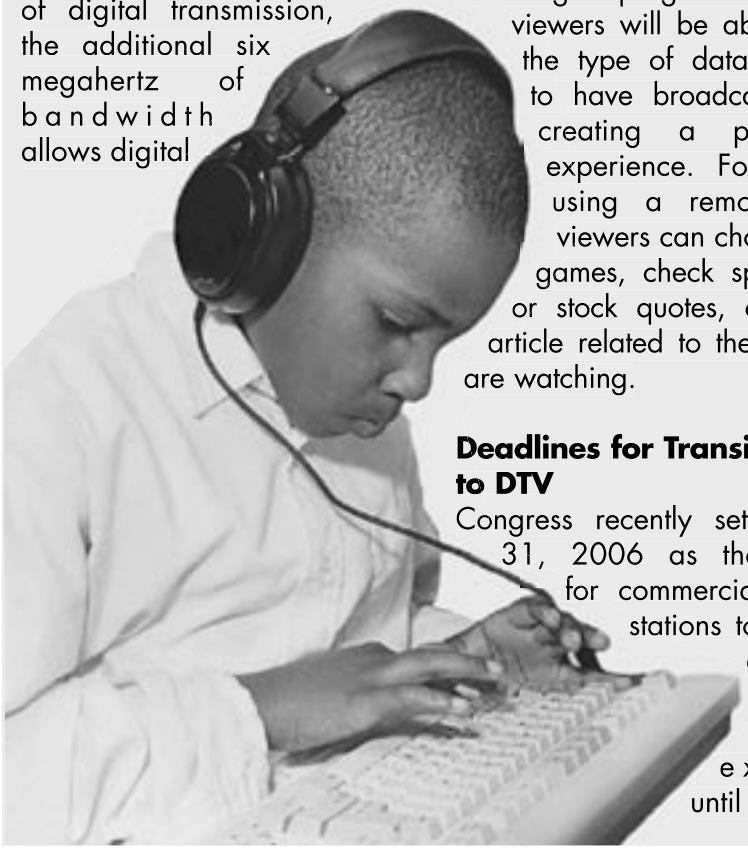
Digital television also offers more than twice the screen resolution and clarity of analog television. DTV is displayed in a wide-screen format with a 16-unit width by 9-unit height ratio, the same ratio as most theater screens.

Interactive TV

When television and computer technology become available on one platform, viewers will be able to obtain more information or purchase merchandise by clicking information links or products on the screen.

Multicasting

Given the compression power of digital transmission, the additional six megahertz of bandwidth allows digital broadcasters to air up to six channels at the same time. Multicasting essentially allows each station to become its own mini-network, giving it the flexibility to choose how to allocate its bandwidth to provide varying levels of A/V quality across its various channels.[5] Each broadcaster will most likely provide different combinations with varying overall hours and quality.



Datacasting

Also known as "enhanced TV," datacasting enables additional information (such as stock quotes, disaster warnings, sports scores, closed captioning and educational material) to be displayed on the television screen while viewers are watching a program. Eventually, viewers will be able to select the type of data they want to have broadcast, thereby creating a personalized experience. For example, using a remote control, viewers can choose to play games, check sports scores or stock quotes, or read an article related to the show they are watching.

Deadlines for Transition to DTV

Congress recently set December 31, 2006 as the deadline for commercial television stations to broadcast digitally. The date may be extended until 85 percent of homes in an area are able to access DTV programming. Federal law requires television stations to broadcast on both analog and digital channels until digital television service and equipment are widely available and the transition is completed. Consumers may purchase a converter box to receive DTV signals on their current television sets or buy a new television already wired to receive those signals. The Federal Communications Commission reports that, as of May 2003, more than 1,000 stations were on the air with DTV signals and every major TV market was served by at least one DTV station.[6] ■

What the Public Thinks

A survey conducted by the Benton Foundation shows that the American public overwhelmingly supports (84%) the idea of extending the responsibility of broadcasters to provide at least three hours of E/I programming on new digital channels they create. A majority of those surveyed (79%) also favor a proposal that requires broadcasters to allocate 5 percent of their proftis into a public broadcasting fund to increase more educational and noncommercial programming (Lake, Snell, Perry & Associates, January 1999).

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programming increased their readiness for kindergarten and had superior high school grades in English, science and math.[7] Another study showed that children ages two to four from low- and moderate-income families, who watched *Sesame Street* and other educational programs, performed better on vocabulary, school readiness, pre-reading and math tests than non-viewers as long as three years later.[8]

Furthermore, an analysis of research on the effects of pro-social television content found that the addition of guided lessons, games and general discussion related to the program "significantly strengthened" the promotion of pro-social behaviors such as cooperation and honesty among child viewers.[9]

With the transition to digital broadcasting, questions arise as to how broadcasters should meet their public interest obligation to children. In April 2003, Children Now led the Children's Media Policy Coalition, comprised of public health, education and advocacy groups, which made recommendations to the Federal Communications Commission about how broadcasters should provide educational programming in a digital environment.

The Three-Hour Rule in a Digital Age

Currently, television broadcasters are required to air three hours of educational/informational (E/I) programming per week between the hours of 7:00 a.m. and 10:00 p.m. as part of their station licensing renewal guidelines. This amounts to about three percent of their total broadcasting time. With digital technology, broadcasters can potentially multicast up to six channels, enabling them to offer considerably more programming to their audience. Thus, the coalition proposed two ways broadcasters could meet their public interest obligations to children. One proposal would require broadcasters to devote three percent of their total broadcasting hours to children's educational programming.[10] The other proposal would require broadcasters to air the three-hour minimum on their primary channels and provide additional services to children. These services could include offering supplemental E/I programming on other channel streams, datacasting educational information or providing financial support for noncommercial educational children's programming.[11]

The Impact of Interactivity

While programming for children in the digital environment is in the early stages, researchers are exploring how interactivity may impact children's cognitive development. Research has found that interactive components in technology have the potential to increase children's ability to learn collaboratively by communicating with peers to solve a problem.[12] Interactive games have been found to be effective learning tools, helping to increase cognitive skills such as spatial imagery and multi-tasking.[13] Yet the influence of interactive technology on cognitive development is also shaped by the type of technology, the genre of the content and the children themselves.[14] More research on the impact of interactivity on children is necessary to determine how digital media technologies can be used to enhance children's cognitive and social development.[15]

Helping Parents Navigate a Digital World

Raising Parent Awareness About the Current TV Ratings System

One of the potential benefits of digital television is that it could be used to help better inform parents about the programs their children watch. The TV ratings system has had limited success in helping parents control their children's viewing habits because parents often do not understand how it works.[16] With datacasting, however, a program's rating could be shown throughout the length of a program. Parents could also click the ratings link to learn why a program is rated "V" for violence, "S" for sex, "L" for language or "D" for suggestive dialogue.

Providing Parents with More Options for Ratings Systems

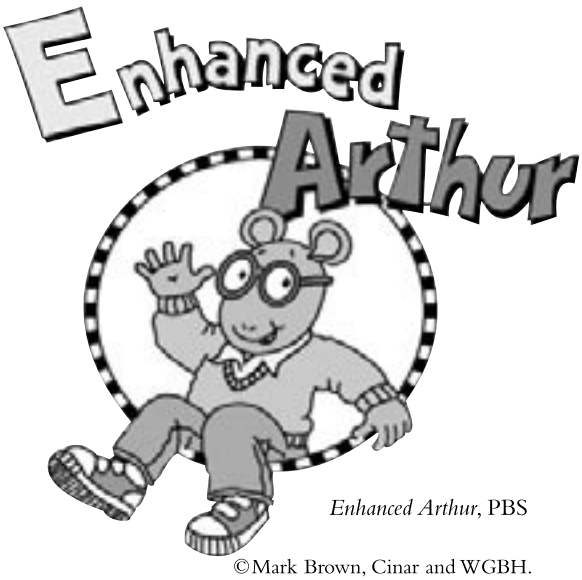
Another benefit of digital technology is that it can be used to support a range of ratings systems. Television sets equipped with existing V-chip technology allow parents to use ratings to block television programming they deem to be unsuitable for their children. Currently, V-chips only interpret two ratings systems: the broadcast industry's parental guidelines and MPAA ratings for movies.[17] Yet technology exists that has the potential to interpret a broader range of ratings systems and can even adapt to changes in existing ratings systems.[18] Such technology is already available in both analog and digital TV sets manufactured by various companies, including Hitachi, Pioneer and Sharp.[19] Parents could click links to

independent ratings, which could be offered by media advocacy groups or ratings boards, and receive additional information about specific programs, rather than relying solely on the rating judgements of the television and movie industries. The FCC should mandate an "open" V-Chip system that allows digital television to support multiple ratings systems or one that enables changes to the current ratings system to give parents more information.

Exploring the Potential of Digital Programming for Kids

A handful of children's shows already incorporate new digital television technologies. WGBH-TV, a PBS affiliate in Boston, produced an enhanced, interactive prototype episode of Arthur, the Emmy Award-winning children's program that promotes reading, writing, creativity and problem-solving, to show teachers and broadcasters what is possible with digital technology. By using a remote control or joystick, beginning readers can benefit from two caption tracks, as well as a glossary of words and definitions datacast throughout the show. Children can pause the show to look up a word in the glossary. They are also instructed to watch for specific events that occur during the episode. After the broadcast, children can download further information or test alternative solutions to the dilemmas Arthur and his friends face during the episode. Using digital technology, children with disabilities can also participate in the program, as it offers sign language for deaf children and audio descriptions for blind and visually impaired children.[20]

Zoboomafoo (PBS), a wildlife show, offers another example of digital programming created for children. Together with Intel, PBS has created an enhanced version of the series, which features companion data that will be transmitted simultaneously through the television signal and made available to users of Intel-based personal computers capable of receiving digital signals. Viewers with these computers can interact with on-screen animation, assist the show hosts, guess the mystery animal of the day or play an on-screen game unique to the enhanced broadcast. Computer games, coloring pages and interviews may also be downloaded after the show.[21]



Enhanced Arthur, PBS

In addition to digitally-enhanced programs for kids, there are entire digital channels devoted to them. Noggin and The N are two commercial-free digital channels devoted to educational programming for preschoolers and teenagers, respectively. Additionally, as commercial television stations begin converting their broadcasts from analog to digital, a number of public television stations are using the new technology to serve children. In 2002, Thirteen/WNET in New York launched Kids Thirteen, the city's first 24-hour, digitally-broadcast educational channel exclusively for children. WCET-TV in Cincinnati recently added WCET Kids to its lineup of educational programming, also offering parents commercial-free television 24 hours a day.[22]

Protecting Children in a Digital World

Interactive Advertising

As television transitions to digital, advertisers are trying new ways to reach consumers. While interactive advertising technologies are still being developed, children are likely to be a primary target.

Young children inherently lack the reasoning ability to understand that advertising may be biased and exaggerated. Consequently, advertising and marketing efforts have been found to have the most impact on children under 8 years of age.[23]

Research shows that children do not recognize the commercial intent of television advertising until the age of seven.[24] The vulnerability of children to commercial persuasion, coupled with innovations by advertisers to reach child consumers, raises concerns

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Programming Ahead of the Game

By Tom Ascheim, Executive Vice President and General Manager of Nickelodeon Digital Television

New technologies transform television again and again. The most obvious change is ever-growing choice: viewers' options keep expanding. The first wave of cable introduced not just new channels, but new ideas. Feature-length movie services, 24-hour news channels and around-the-clock music videos all were made possible by new cable channels.

With digital television, choice again is the difference. We have three-digit channel numbers. And, once more, expanded choice offers the opportunity to invent new forms of TV—deep, rich content for specific audiences targeting specific ends.

At Noggin and The N, we use that opportunity to provide 24 hours of educational programs to young people every day. By day, we serve preschoolers throughout their waking hours. Noggin offers original shows that combine storytelling and interactivity with essential subjects like mathematics and science. We feature beloved Nick Jr. characters like Bob the Builder and Oswald, as well as landmark learning programs like *Blue's Clues* and *Dora the Explorer*. We present both the daddy of preschool educational television, *Sesame Street,* and, exclusively, its interactive offspring, *Play With Me Sesame*.

When it's bedtime for little ones and primetime for teens, our nighttime block, The N, delivers thought-provoking dramas, comedies and animation. The N speaks to adolescents about real life and strives to become an authentic voice for their generation, while supporting their social, emotional and intellectual development.

Thanks to digital cable, Noggin and The N provide two critical segments of the population with TV choices that meet their wants and needs.

We have understood from the start that digital means more than an increased number of channel choices. Digital technology makes interaction possible. That translates to vast educational potential. As a digital service, we can offer each age group an integrated viewing and interactive experience.

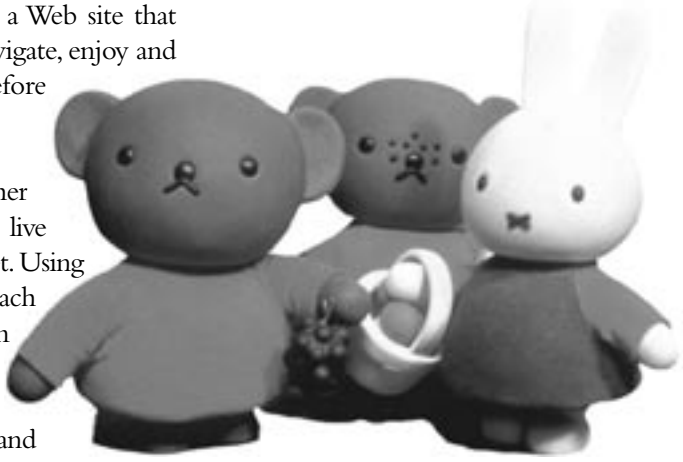
Our audience is the first generation to grow up in a connected world. Through the Internet, children can create through words and images, and we can reward and motivate them by broadcasting their creations.

Noggin TV presents key preschool content, guided by national standards. At Noggin.com, we provide opportunities to practice and solidify the learning introduced on TV. Using digital broadband to provide rich audio and animation, we've built a Web site that young children can navigate, enjoy and learn from, even before they can read.

Teens are a whole other story. Today's teenagers live and breathe the Internet. Using the same core approach as Noggin, The-N.com allows teen viewers to elaborate, analyze and debate ethical issues and controversies raised in TV shows on The N. Bulletin boards, creation/publication tools and polling engage teens in topics that meaningfully affect their lives—topics that few middle or high schools have the luxury to address.

As educators, we have a third audience: the adults who love and care for kids. Through digital technology, we serve them, too. A separate Web site, http://discussions.the-n.com, helps parents, teachers and youth leaders talk with teens about issues raised on The N.

Choice and interaction only begin to exploit the potential of digital television. The future will give our audience the power to shape its own media choices. More sophisticated interactive capabilities will make individualized learning opportunities a reality. Young people have always been the first to embrace new technologies and put them to the test. Tomorrow's Noggin and The N viewers will surely do the same. They'll create media and electronic experiences we older folks can only imagine. We can, however, help them get there by making the most of new technologies today. ■



Boris, Barbara, and Miffy, Noggin

Digital Television Policy Recommendations

The Children's Media Policy Coalition has made the following recommendations to the Federal Communications Commission (FCC) as it considers the public interest obligations of digital television broadcasters.[28] The coalition has urged the FCC to rule on these public interest obligations before considering any other issues related to the transition to digital television.

Educational/Informational Programming

Broadcasters should be required to provide educational/informational programming to children in the digital age. One proposal would require broadcasters to devote three percent of their total broadcasting hours to children's educational programming. Another proposal would require broadcasters to air the three-hour minimum on their primary channel and provide additional services, such as supplemental E/I programming on other channel streams, datacasts of educational information or financial support for noncommercial educational children's programming.

Interactive Advertising

The FCC should prohibit commercial Web site links from being embedded in children's programming. The Children's Online Privacy and Protection Act (COPPA) should also be incorporated into the digital age to protect children.

Helping Parents Make Informed Decisions

Datacasting technology should be used to provide parents with ratings information throughout the length of any given program. Parents could click a link to learn why a program is rated "V" for violence, "S" for sex, "L" for language or "D" for suggestive dialogue. Links to independent ratings offered by media advocacy groups or other ratings boards should also be available for parents who want to access additional information. The FCC should also mandate an "open" V-Chip system, which would allow a broader range of ratings systems to be supported by digital television sets. ■

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about what marketing methods may be employed on digital television.

Advertisers already are using interactive media, specifically the Internet, to entice child customers. Many companies are using a new type of marketing, known as "advergaming," which encourages children to play Internet games. Advergames are often found on Web sites of popular products or video games. For example, on Neopets.com, young children take care of animated pets and earn points by keeping them alive, playing games and feeding them. Children also acquire neopets points by answering marketing questionnaires and visiting product-sponsored Web sites, such as Capri Sun, Frito-Lay and Bubble Yum. Finally, points are awarded for recruiting other children, which allows Neopets.com to garner more child customers.[25]

Children's Privacy

Some advergames permit advertisers to monitor players without their knowledge, providing advertisers information about the length of time child consumers are online and what choices they make while playing. Advergames are very popular among children and, as such, are highly appealing to advertisers. One advergame developer explained, "The youth are the biggest influencers of consumer brands. They're what defines what cool is (sic)."[26]

Advocates are increasingly concerned that new technology will be used to track the viewing habits and interests of viewers without their knowledge or consent. A report by the Center for Digital Democracy finds that interactive television can allow advertisers to target individual viewers with personalized ads, which may increase the likelihood of impulse purchases.[27] Advertisers will

be able to target children according to their gender, age, household income and/or race, by tracking the history of their individual television viewing habits.

Updating Advertising Policies in a Digital Age

As the advertising industry develops new methods of reaching child consumers, existing regulations that protect them from commercial influences must be reexamined and updated. Several recommendations have been proposed by the Children's Media Policy Coalition, including one that prohibits commercial Web site links from being embedded in children's programming. The Children's Online Privacy and Protection Act (COPPA), which prohibits Web sites designed for children under the age of 13 from collecting, using or disclosing personal information without verifying parental consent, also must be updated for digital television. These new proposals will help protect children's privacy and protect them from unlawful advertising.

Conclusion

The transition from analog to digital television provides a unique opportunity to address children's interests proactively in a rapidly changing technological age. Digital television has great potential to provide our nation's youth with access to increased educational programming and to help parents make informed choices about the programs their children watch. Yet digital television also has the potential to expose children to far more advertising than previously imagined, as well more targeted ways of selling products to them.

Now is the time to look forward and determine how digital television can address children's interests, rather than reacting later when their interests are not served. Broadcasters, policy-makers and children's advocates must work together to create a digital media environment worthy of our nation's children. ■

Endnotes

[1] Kaiser Family Foundation, *Kids and Media at the New Millennium* (Menlo Park: Kaiser Family Foundation, 1999), p. 23.

[2] Kaiser Family Foundation, "Kids and Media at the New Millennium: A Comprehensive National Analysis of Children's Media Use Chart Pack," http://www.kff.org/content/1999/1535/ChartPack.pdf, generated 11/19/03.

[3] Kaiser Family Foundation, *Zero to Six: Electronic Media in the Lives of Infants, Toddlers and Preschoolers*, October 2003, pp. 4-5.

[4] Media Access Project, "Digital TV and the Spectrum Grab of 1997," http://www.mediaaccess.org/programs/digitaltv/index.html, generated 12/21/03.

[5] *See* Federal Communications Commission, *Digital Television Tower, supra*, at Questions 2-3 ("There is a trade-off between using digital transmission capacity for improved pictures and sound and using it to transmit additional programs."); Center for Media Education, *supra* ("Initially, at least, the latter option [of SDTV multicasting] will be far more practical (given the scarcity of sets capable of displaying HDTV), which means that every local TV station will be able to control a 'mini-network' of its own."); Cringely & PBS, *supra*, at § *Multi-Casting*; Digital Television: The Site, *supra*, at § *SDTV Multicasting*.

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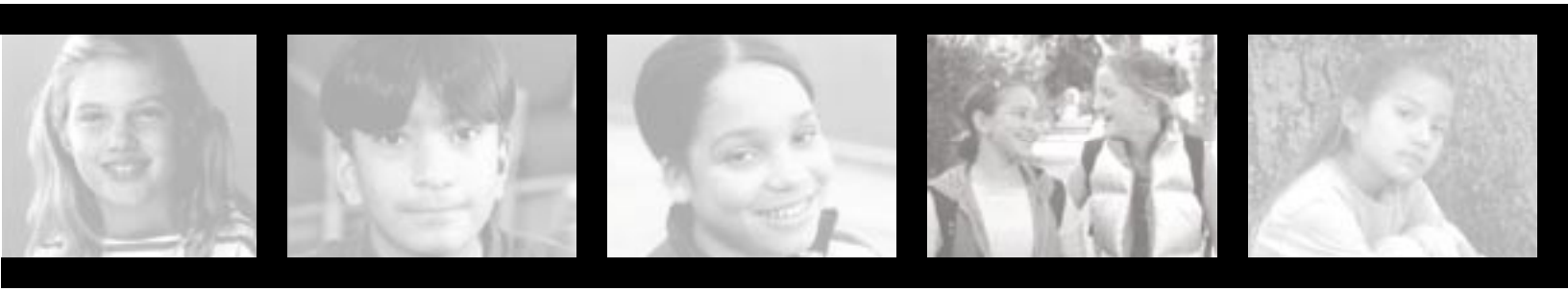

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About Children Now

Children Now is a research and action organization dedicated to assuring that children grow up in economically secure families, where parents can go to work confident that their children are supported by quality health coverage, a positive media environment, a good early education and safe, enriching activities to do after school. Recognized for its expertise in media as a tool for change, Children Now designs its strategies to improve children's lives while at the same time helping America build a sustained commitment to putting children first. Children Now is an independent, nonpartisan organization.

The Children & the Media Program was established in 1993. Our goal is to improve the quality of media for children and about children's issues.

Media Now serves as a link between academia and the entertainment and advertising communities.

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