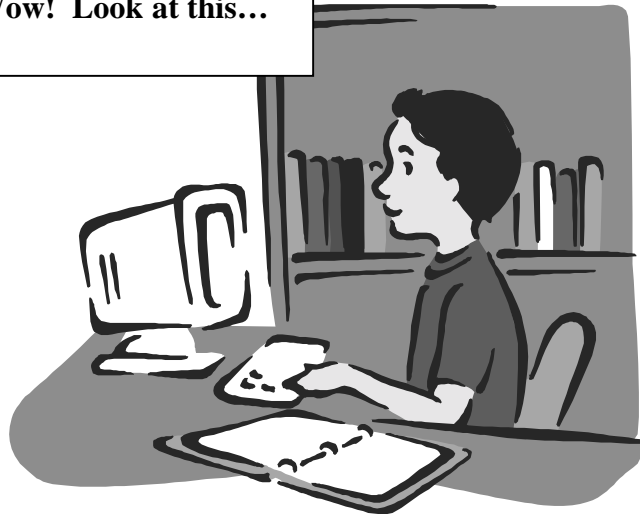


# An Annotated Bibliography on the Implications of Interactive Media for Adolescents

Andrea L. Solarz, PhD  
Editor

Wow! Look at this...



AMERICAN  
PSYCHOLOGICAL  
ASSOCIATION

Public Interest Directorate  
*Children, Youth, and Families Office*  
*Office of Public Interest Initiatives*

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# TABLE OF CONTENTS

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<b>ACKNOWLEDGEMENTS .....</b>	<b>V</b>
<b>INTRODUCTION.....</b>	<b>1</b>
BACKGROUND .....	1
METHOD.....	2
REPORT ORGANIZATION .....	3
<b>BIBLIOGRAPHY .....</b>	<b>5</b>
GENERAL REVIEWS .....	5
POLICY .....	7
INTERVENTION, EFFECTIVENESS, AND EVALUATION STUDIES.....	8
Education and Careers .....	8
Adolescent Development .....	9
Violence Prevention .....	10
USE OF INTERACTIVE MEDIA BY ADOLESCENTS.....	11
Patterns and Types of Use.....	11
Access and the Digital Divide.....	12
Accessing Health Information.....	14
Playing Video Games .....	14
ATTITUDES AND BELIEFS ABOUT INTERACTIVE MEDIA .....	15
EFFECTS AND INFLUENCES OF INTERACTIVE MEDIA.....	16
General Reviews.....	16
Aggression and Violence .....	18
Sexual Risks, Behaviors, and Attitudes .....	21
Mental and Social Health Effects .....	22
Cognitive Effects .....	24
Miscellaneous Effects .....	26
USES AND APPLICATIONS OF INTERACTIVE MEDIA .....	27
Education and Careers .....	27
Interactive Technology as a Learning Tool .....	29
Communication .....	35
Health Promotion .....	36
Use of Interactive Media as a Research Tool/Methodology .....	36
WORKING WITH ADOLESCENTS WITH SPECIAL NEEDS .....	37
CREATING AND EVALUATING WEB SITES .....	39

<b>FEDERALLY-FUNDED RESEARCH CURRENTLY UNDERWAY OR RECENTLY COMPLETED.....</b>	<b>41</b>
INTERVENTION RESEARCH USING INTERACTIVE MEDIA.....	41
Substance Abuse.....	41
Sexual Behavior, Sexually-Transmitted Disease, and HIV/AIDS .....	45
Physical and Mental Health .....	46
Violence and Injury Prevention.....	48
INTERACTIVE MEDIA AS A LEARNING TOOL.....	50
WORKING WITH YOUTH WITH DISABILITIES.....	53
DANGERS OF INTERACTIVE MEDIA .....	54
MISCELLANEOUS .....	56
<b>REFERENCE LIST.....</b>	<b>59</b>

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## INTRODUCTION

Interactive media – video games, the computer, the Internet, CD-ROMs – are a large presence in the lives of children and adolescents today. The increasing role of interactive media, both in play and in school, raises numerous questions about both the risks and benefits of these new technologies. This paper presents an annotated bibliography of recently published material (i.e., since 1995) that examines the role of interactive media in the lives of adolescents, the impact of interactive media, and uses of interactive media as an intervention or learning tool.<sup>1</sup>

The review revealed a limited number of methodologically sound research studies on adolescents and interactive media, perhaps not surprising given the relatively recent emergence of and widespread access to computers and the World Wide Web. Many of the published reports included here focus on examining adolescents' access to and time spent exposed to interactive media, their patterns of use, and the potential negative effects of those interactions. There are also numerous reported examples of possible applications of interactive media, particularly as a tool for learning. An area that has continued to receive attention is the use of interactive media in educational settings, particularly with youth with special needs (e.g., mental retardation, physical disability). It should be noted that the disproportionate amount of material found in the educational arena may in part be an artifact of the broad scope of the ERIC (Educational Resources Information Center) database, which includes conference presentations as well as journal articles and books. Nonetheless, within the educational literature, an important focus has clearly been on this particular group of young people.

The effect of violence in media on young people (including that of non-interactive media such as television and movies), which demanded a significant amount of research attention prior to the period captured in this review, was not found to be a primary focus in recent years. Although this review revealed several studies focused on the effects of violence in interactive media, they were outnumbered by the review articles synthesizing the extant body of research in this area.

The review revealed a number of limitations in the research base. Many of the reported studies were based on small, unrepresentative samples; few studies employed true experimental designs. Additionally, there were few published reports of research studies examining the use of interactive media in interventions targeting adolescents. Based on the types of studies now supported with federal funds, however, the number of reports of intervention studies should increase over the next several years.

## Background

The APA has had a longstanding interest in the impact of media. For example, in 1985 APA passed a resolution calling on parents to limit their children's exposure to violence on television and on the television industry to reduce the level of violence in children's programming because of the research

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<sup>1</sup> While there is no standard age range for defining adolescence, for the purposes of this review adolescence was roughly considered to refer to ages 10 through 18. Although the upper age boundary is sometimes defined as older than 18 (e.g., age 19 or 21), there is widespread agreement that those in the age range of 10 to 18 should be considered adolescents. We recognize that there are numerous studies on interactive media and college students that include older adolescents aged 18 and older. However, these studies are excluded from the scope of this review for several reasons. Most of these studies also include in their samples many youth older than age 18, and it is not possible to determine the age distribution from the abstracts in the databases in order to assess the extent to which the studies describe adolescents. More importantly, although adolescent development certainly does not conclude at age 18, we believe that some of the key developmental issues differ for high-school aged adolescents living at home as compared to older adolescents away at college.

evidence linking television violence and aggressive behavior in children. And, in 1992, the APA Task Force on Television and Society published a report, *Big World, Small Screen: The Role of Television in American Society*, confirming the link between TV violence and aggression.

In the last 15 years, however, the media landscape has changed significantly for children and adolescents. During this time, the proportion of households with a computer has increased exponentially, and computers are nearly universally present in schools. And, within the past 10 years, the Internet has evolved from being a limited tool for use by researchers, government, and computer “geeks” to a widely accessible digital playground for millions of Americans. These new forms of computer-based interactive media now boast a significant presence in the lives of young people, an increasing number of whom were first exposed to computers before they took their first step or said their first word.

The APA undertook the development of this bibliography to assess the state of the field with respect to what is known about the influences and impacts of the new interactive media on young people, to get a sense of the focus of current research attention, and to identify knowledge gaps. Despite the limitations of the existing material, we believe that this overview provides a useful snapshot of the state of the field, and can help to stimulate ideas for further research. We therefore make it available to others.

## **Method**

Several databases were reviewed that provide comprehensive coverage of the social sciences, education, and biomedical literature: PsycINFO, ERIC, and MEDLINE (searched via PubMed through the National Library of Medicine). The electronic catalog of the National Technical Information Service was also searched, but did not reveal any relevant results. Search terms included “interactive media,” “computers,” “computer aided instruction,” “Internet,” “video games,” and “web.” These terms were paired with the terms “adolescent,” “adolescence,” “teens,” and “children.” The search was restricted to material dated 1995 or later. Close to 1,000 citations were evaluated for inclusion in the bibliography. Decisions regarding whether to include material were based solely on the abstracts; the source material was generally not reviewed. The source of each abstract is identified in the annotations.<sup>2</sup> Included in the review are reports of research studies, as well as publications describing the development or use of interactive media targeted at adolescents. Also included are syntheses of past research.

This bibliography is not a completely comprehensive review of the available information. For example, it focuses primarily on publications based on U.S. populations. Although data gathered on international populations are of some interest, most of the few international studies revealed in the database searches had only very limited applicability to U.S. populations (it was not always possible to determine from the abstracts whether the study samples were U.S.-based). Also excluded are studies that simply referred to the presence of a website used solely to provide information (e.g., not as part of an intervention). Relevant publications by various professional and advocacy organizations are generally not included since they typically are not indexed in the databases reviewed. Because relatively few published articles were identified (particularly in refereed journals), the bibliography was broadened to include conference presentations and proceedings and dissertations if they appeared in the databases.

In addition to the search of literature databases, two federal databases were searched to identify relevant currently funded and recently concluded studies: the National Institutes of Health (NIH) CRISP (Computer Retrieval of Information on Scientific Projects) database and the National Science Foundation Award Abstracts Database. CRISP, which is maintained by the NIH Office of Extramural Research,

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<sup>2</sup> Because of copyright restrictions on the use of abstracts in the PubMed database, source materials identified only through this database were reviewed and summarized by the editor.

contains information on federally funded biomedical and behavioral research projects conducted at universities, hospitals, and other research institutions. The database includes projects funded by the National Institutes of Health, Substance Abuse and Mental Health Services, Health Resources and Services Administration, Food and Drug Administration, Centers for Disease Control and Prevention, Agency for Health Care Research and Quality, and Office of Assistant Secretary of Health. A comparable searchable online database was not found for the Department of Education.

### **Report Organization**

The cited works are organized into sections covering the following areas: general reviews; policy statements and articles; intervention, effectiveness, and evaluation studies; the use of interactive media by adolescents; adolescents' attitudes and beliefs about interactive media; effects and influences of interactive media; various uses and applications of interactive media; working with adolescents with special needs, and creating and evaluating websites. When publications could fit under multiple topic areas, an effort was made to assign them to the topic representing the primary theme of the article. Reports that are of research studies (including evaluation research) are identified as such to aid the reader in locating abstracts that report data gathering. Note that no effort was made to evaluate the soundness of the methodologies employed. Following the citations is a listing of currently underway or recently completed federally-funded studies. Finally, a compiled, alphabetized list of citations is presented.





## BIBLIOGRAPHY<sup>3</sup>

### General Reviews

Calvert, Sandra L. **Children's Journeys through the Information Age**. (1999). McGraw-Hill series in developmental psychology. New York, NY, US: McGraw-Hill. (from the foreword) In *Children's Journey through the Information Age*, Sandra Calvert describes the current and emerging information technologies that influence children's lives, summarizes what is known about their effects, and discusses their meaning for parents, teachers, and policymakers. Dr. Calvert also identifies the major messages that TV, computer games, CD-ROMs, and other information technologies convey to the children who use them. We learn about the gender roles and ethnic and racial stereotypes that are implicit in many programs. We discover the power of the media to educate and to heighten either aggressive or prosocial tendencies in young viewers. Throughout this journey down the highway of information technology, Dr. Calvert cautions her readers against simplistic conclusions about the media's influence on children. Contrary to those who either idolize or demonize the information technologies, her assessment is a more balanced recognition of its multifaceted potential for improving or blunting children's understanding, depending on how it is used. (PsycINFO Database Record [c] 2002 APA, all rights reserved)

Healy, Jane M. (1998). **Failure to Connect: How Computers Affect Our Children's Minds—for Better and Worse**. Simon and Schuster, New York, NY; Web site: [www.SimonSays.com](http://www.SimonSays.com). As the federal government provides funding to wire classrooms to the Internet, software companies market educational programs even for preschoolers, and school administrators cut funding in other areas to make room for new computers, it is time to examine the impact of computer use on children. Presented in three parts, this book examines the advantages and drawbacks of computer use for children at home and at school, exploring its effects on children's health, creativity, brain development, and social and emotional growth. Part 1 of the book discusses the current situation in schools, homes, and home schools; reviews the basics of educational computing; and offers guidelines for technology choices. Part 2 examines personal issues in technology use, including physical health, intellectual and brain development, and the social, emotional, and other personal aspects of children and teens using computers. Part 3 describes practical applications that illustrate appropriate and inappropriate ways to use new learning technologies with different age groups. The book concludes by noting that with thought, planning, and good sense, adults should be able to help children to develop minds that are able to deal with the challenges of the future. Also, the real-life values in the lives parents structure for their children will determine the kind of world they will inhabit. Each chapter contains references. (ERIC Database)

Montgomery, Kathryn C. (2000). **Children's Media Culture in the New Millennium: Mapping the Digital Landscape**. *Future of Children*, 10(2), 145-167. The article begins with a brief overview of economic and technological trends in the emergence of the new digital media culture of children. Next, the article provides a description of the types of Web sites being created for children and a more focused look at some of the key interactive features of the Internet and their implications for children. The research is based on preliminary findings from a major study in progress (Center for Media Education, in press). As such, it is at best a snapshot or a few frames in a moving field. But precisely because this digital media system is still in its early, formative stages, the authors have an opportunity to influence its future direction. With this goal in mind, the article concludes with an assessment of the actions needed to help ensure the development of a quality digital media culture for children. (PsycINFO Database Record [c] 2000 APA, all rights reserved)

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<sup>3</sup> The different databases use varying reference styles. No attempt was made here to have the citations conform to APA reference style.

**Proceedings of a Conference on Media and Youth.** (2000). November 15-16, 1999. Journal of Adolescent Health, 27(2 Suppl): 1-76. This special supplement of the Journal of Adolescent Health presents the findings of a small conference of experts convened to review what is known about how adolescents use and are affected by the media, and to make recommendations for future research. (Editor)

Singer, Dorothy G.; Singer, Jerome L. (Eds.). (2001). **Handbook of Children and the Media.** Thousand Oaks, CA, US: Sage Publications, Inc (from the introduction) This handbook and comprehensive resource represents an effort to review, through the contributions of research experts, the past and potential future impact of the electronic media on growing children in the US and to some extent all over the world. This volume places greatest emphasis on the television medium as it has developed over the past 50 years, but also includes the growing influence of the Internet, video games, and other media. The effects of media on development, and the status of media as a socialization agent are explored in the 4 sub-sections of Part I. Part II concerns the media environment, industry, and the future of the media's technology. Part III looks at policy and advocacy issues. Providing the groundwork for informed policy-making and programming, this reference examines the current state of research and suggests the course for the next generation of researchers. (PsycINFO Database Record [c] 2000 APA, all rights reserved)

Strasburger, VC; Wilson, BJ. (2002). **Children, Adolescents, and the Media.** New York: Sage. Taking an approach grounded in the media effects tradition, this book provides a comprehensive, research-oriented treatment of how children and adolescents interact with the media. Chapters review the latest findings as well as seminal studies that have helped frame the issues in such areas as advertising, violence, video games, sexuality, drugs, body image and eating disorders, music, and the Internet. Each chapter is liberally sprinkled with illustrations, examples from the media, policy debates, and real-life instances of media impact. (From the publisher's website: [www.sagepub.co.uk](http://www.sagepub.co.uk))

von Feilitzen, Cecilia; Carlsson, Ulla (Eds.) (2000). **Children in the New Media Landscape: Games, Pornography, Perceptions. Children and Media Violence Yearbook, 2000.** United Nations Educational, Scientific, and Cultural Organization, Goteborg (Sweden). International Clearinghouse on Children and Violence on the Screen. UNESCO International Clearinghouse on Children and Violence on the Screen, Goteborg, Sweden. Two bibliographies compiled by Johan Cronstrom are attached: "Research on Pornography and Sex in the Media Bibliography: A Selection (1970-)" and "Research on Video and Computer Games Bibliography: A Selection." This document consists of three sources which compile research on the influence of media sex and violence on children's development. The first is a collection of articles on children and the media; the remaining two are bibliographies of research—one on pornography and sex in the media, the other on video and computer games. The articles in the collection are: (1) "The Monster Massacre or What Is a Violent Electronic Game?" (Christofferson); (2) "Video Game Violence and Aggression: A Review of Research" (Griffiths); (3) "Killing Time? A Canadian Meditation on Video Game Culture" (Kline); (4) "Video Games and Violence: Controversy and Research in Japan" (Sakamoto); (5) "Computer Games and Aggression: Research in Australia and New Zealand" (Durking and Low); (6) "Competitive Aggression in Australian Adolescent Males during Videogame Play" (Ask, Augoustinos, and Winefield); (7) "Boys, Girls, and Violent Video Games: The Views of Dutch Children" (Nikken); (8) "New Media and Young People in Sweden" (Petrov); (9) "It Isn't Real: Children, Computer Games, Violence, and Reality" (Sorensen and Jessen); (10) "Perceptions of Video Games among Spanish Children and Parents" (Casas); (11) "Violent Elements in Computer Games: An Analysis of Games Published in Denmark" (Schierbeck and Carstens); (12) "Classifications of Interactive Electronic Media" (Christofferson); (13) "Effects of Sexual Content in the Media on Children and Adolescents" (Wartella and others); (14) "Sexual Messages on Entertainment TV in the U.S.A." (Kunkel and others); (15) "Does Pornography Influence Sexual Activities?" (Forsberg); (16) "What Is the Internet? Basic Technology from the User's Perspective" (Evjen and Bjornebekk); (17) "Sex on the Internet: Issues, Concerns, and Implications" (Griffiths); (18) "Violent Pornography on the Internet: A Study of Accessibility and Prevalence" (Bjornebekk and Evjen); (19) "Paedophile Information Networks in Cyberspace"

(O'Connell); (20) "Child Sex Iconography: Iconic Narratives of Child Sex Myths" (O'Connell); (21) "Child Abuse on the Internet" (Arnaldo); (22) "The Audience's Perception of Media Violence: Review of Research in the UK" (Hargrave); (23) "Violence on Chilean Television and Audience Perception" (Silva and Souza); (24) "Censorship and the Third-Person Effect: A Study of Perception of Television Influence in Singapore" (Gunther and Ang); (25) "Attitudes to Television Content in Australia" (Cupitt); (26) "A Study on Canadian Family Discourse about Media Practices in the Home" (Caron and Caronia); (27) "The Internet and the Family: The View of U.S. Parents" (Turow with Nir); (28) "U.S. Adults and Kids on New Media Technology"; (29) "Kids Discuss Safety on the Internet" (Childrens Express); (30) "Opinions in Australia, Germany, and the U.S. on Control of Misuse on the Internet" (Waltermann and Machill); and (31) "The Protection of Minors in the Public Opinion: An Austrian Perspective" (Geretschlaeger). (ERIC Database)

Walsh, DA. (2000). **The Challenge of the Evolving Media Environment**. *Journal of Adolescent Health*, 27(2 Suppl): 69-72. The author identifies three areas for future research on the effects of media on children: 1) physiologic and neurologic effects of media use; 2) the extent to which individual differences mediate media effects; and, 3) the effectiveness of media education. Media researchers can have an impact on whether the digital revolution will harm or benefit children by clearly articulating what is known about potential benefits and risks. (Editor)

Wartella Ellen A.; Jennings Nancy. (2000). **Children and Computers: New Technology—Old Concerns**. *Future of Children*, 10(2) 31-43. This article places studies on children and computers in a historical context, noting the recurrent themes and patterns in media research during the twentieth century. Initial research concerning each innovation has tended to focus on issues of access and the amount of time children were spending with the new medium. It is noted that as use of the technology became more prevalent, research shifted to issues related to content and its effects on children. The 1st section of this article describes the debates surrounding the introduction of the earlier media, noting the similar promises and objections and trends in research that have emerged each time. The 2nd section provides a more detailed discussion of how the controversy and research surrounding the introduction of computer technology and new media reflect these same themes. The authors conclude that to help inform and sustain the creation of more quality content for children, further research is needed on the effects of media on children, and new partnerships must be forged between industry, academia, and advocacy groups. The article concludes with a few brief observations about directions for the future. (PsycINFO Database Record [c] 2002 APA, all rights reserved)

Wartella, E.; O'Keefe, B.; Scantlin, R. (May 2000). **Children and Interactive Media - A Compendium of Current Research and Directions for the Future**. Markle Foundation, New York. This report, which was commissioned by the Markle Foundation, reviews all publicly available research to see how much is known about the role of interactive media in children's lives and its impact. A series of research recommendations is included. The report is available at [www.markle.org/news/digital\\_kids.pdf](http://www.markle.org/news/digital_kids.pdf). (Editor)

## Policy

American Academy of Pediatrics Committee on Public Education. (1999). **Media Education**. *Pediatrics*, 104(2 Pt 1): 341-3. The American Academy of Pediatrics recognizes that exposure to mass media (i.e., television, movies, video and computer games, the Internet, music lyrics and videos, newspapers, magazines, books, advertising, etc.) presents both health risks and benefits for children and adolescents. Potential risks include increases in violent behavior, exposure to messages promoting use of tobacco and alcohol, and increases in obesity due to lack of physical activity. Media education has the potential to reduce these harmful effects. Pediatricians are encouraged to become educated about the public health risks of media exposure and to begin incorporating questions about media use into their routine visits with

patients. Pediatricians can alert and educate parents and others about the potential health risks of media use for children and adolescents. (Editor)

Brown, Jane D.; Cantor Joanne. (2000). **An Agenda for Research on Youth and the Media**. Journal of Adolescent Health, 27(2 Suppl): 2-7. This article presents the findings of a group of experts convened at the request of the William T. Grant Foundation to review what is known about how adolescents use and are affected by the media, and to make recommendations for future research. The experts identified several assumptions that should guide future research on youth and media, guiding principles for research on youth and the media, and top priorities for research on youth and the media. In addition, they identified several areas of attention for policy makers. (Editor)

Montgomery, Kathryn. (2000). **Youth and Digital Media: A Policy Research Agenda**. Journal of Adolescent Health, 27(2 Suppl): 61-8. Youth have widely adopted the new digital communications technologies. As a result, web sites and other new-media content specifically designed to target youth have proliferated. In addition, a new generation of market research companies has developed that focuses specifically on new-media industries, and market research on children, youth, and the new media is dramatically outpacing academic research on the subject. Researchers have a critical role to play in contributing knowledge to the development of public policies related to youth and new media. Several public policy areas that can be informed by research are identified. (Editor)

## **Intervention, Effectiveness, and Evaluation Studies**

### **Education and Careers**

Carico, Kathleen M. (2000). **On-Line Multicultural Literature Discussions: How This Discourse Community Informs Teacher Educators**. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). This study investigated the effects of computer-based technologies on literature discussions between pre-service teachers and eighth graders. Most participating pre-service teachers were preparing to work with students in literacy development. Over two semesters, eighth graders were paired with college students taking a young adults literature course. The pairs read and discussed multicultural short stories for teens, poetry, essays on multiculturalism, and novels. Electronic mail helped foster relationships between pairs. An electronic bulletin board allowed all participants to interact asynchronously with the entire group around various topics. Small groups met in virtual environments (MOOs) to conduct online literature circles. Data sources included surveys on technology needs; e-mail correspondence; process logs; interview transcripts from student focus groups; researchers' planning notes and logs; and teacher and student analyses of the MOOs. Results indicated that MOOs provided space for fuller participation by more people. Eighth graders appreciated being able to speak more freely and anonymously than they could in class. University students appreciated opportunities to discuss literature with adolescents. Both groups were surprised at the number of in-depth issues they discussed. Complaints about the MOOs included the anonymity factor (for some students), eye strain, and insufficient typing skills. (ERIC Database) **[Research]**

Kovalski, Theresa M.; Horan, John J. (1999). **The Effects of Internet-Based Cognitive Restructuring on the Irrational Career Beliefs of Adolescent Girls**. Journal of Cognitive Psychotherapy, 13(2), 145-152. Explored the effect of Internet-based cognitive restructuring on the maladaptive career beliefs of adolescent girls. Ss were blocked on ethnicity and randomly assigned to either an interactive Internet treatment or to a control treatment involving computer-based instruction in another curriculum area. Scores on 4 measures reflecting irrational career beliefs and stereotyping were evaluated. A triple interaction on Self-Stereotyping (i.e., consistency between current career choice vs. career choice "if I

were a boy") suggested that the treatment was effective for Caucasians but not for minorities. (PsycINFO Database Record [c] 2002 APA, all rights reserved) **[Research]**

Luzzo, Darrell Anthony; Pierce, Gina. (1996). **Effects of DISCOVER on the Career Maturity of Middle School Students**. *Career Development Quarterly*, 45(2), 170-72. Evaluates the effect of a computer-assisted career guidance system on the career maturity of 38 students in a rural middle school. Investigates whether a relatively brief interaction with the program affects the career maturity of such students. Results indicated significant gains in career maturity among students in the treatment group. (ERIC Database) **[Research]**

Shermis, Mark D.; Mzumara, Howard; Brown, Mike; Lillig, Clo. (1997). **Computerized Adaptive Testing Through the World Wide Web**. Paper presented at the annual meeting of the American Psychological Association, Chicago, IL. An important problem facing institutions of higher education is the number of students reporting that they are not adequately prepared for the difficulty of college-level courses. To meet this problem, a computerized adaptive testing package was developed that permitted remote placement testing of high school students via the World Wide Web. The rationale for developing the project, how the programming was formulated, implementation and security issues, and preliminary data on student performance/reactions to the testing are presented in this report. The sample for the study consisted of 223 high school students from a suburban school district. Seventy-two percent of the students were juniors—grade point averages ranged from 1.5 to 4.0 (on a four-point scale). Three placement tests (a holistically scored writing sample, a reading test, and a math placement exam) were adapted for administration over an Internet link. Results show that student performance and perceptions of the math and writing tests were generally positive. Plans are underway to use a computerized writing evaluation program to assess written essays and to project what a student's performance might be one or two years into the future. (ERIC Database) **[Research]**

### **Adolescent Development**

Goldsworthy, Richard C.; Barab, Sasha A.; Goldsworthy, Elizabeth L. (2000). **The STAR Project: Enhancing Adolescents' Social Understanding Through Video-based, Multimedia Scenarios**. 2000. *Journal of Special Education Technology*, 15(2), 13-26. This article describes a computer game that supports the development of learners' social problem-solving skills. In a controlled three-group design, the group using the prototype game performed significantly better than an attention-placebo control and comparably to a therapist-directed group on measures of problem solving and engagement. However, no significant differences were found on social skills rating scales. (ERIC Database) **[Research]**

Horan, John J. (1996). **Effects of Computer-Based Cognitive Restructuring on Rationally Mediated Self-Esteem**. *Journal of Counseling Psychology*, 43(4), 371-75. Students in grade 11 and grade 12 with below-average self-esteem (N=56) were classified by gender and randomly assigned to either computer-based cognitive restructuring or a relaxation-training control condition. The computer intervention targeted irrational beliefs linked to low self-esteem. Results indicate that the computer-based technique improved self-esteem. (ERIC Database) **[Research]**

## Violence Prevention

Bosworth, Kris; Espelage, Dorothy; DuBay, Tracy. (1998). **A Computer-Based Violence Prevention Intervention for Young Adolescents: Pilot Study**. *Adolescence*, 33(132), 785-95. Reports on the development and pilot testing of a multimedia tool (SMART Talk) that teaches anger management, perspective taking, and mediation skills. Results indicate that SMART Talk is popular with both males and females, and its use increases knowledge and practice of prosocial behaviors. (ERIC Database) **[Research]**

Bosworth, Kris; Espelage, Dorothy; DuBay, Tracy; Daytner, Gary; Karageorge, Kathryn. (2000). **Preliminary Evaluation of a Multimedia Violence Prevention Program for Adolescents**. *American Journal of Health Behavior*, 24(4), 268-80. Evaluated the impact of Smart Talk, a computer-based violence prevention program for adolescents. Control and intervention-group middle-school students completed assessments before and after program implementation. Results indicated that the intervention successfully diminished intervention students' beliefs supporting violence and increased intentions to use nonviolent strategies. There were no differences by gender, race, or socioeconomic status. (ERIC Database) **[Research]**

Pacifici, Caesar; Stoolmiller, Mike; Nelson, Carol. (2001). **Evaluating a Prevention Program for Teenagers on Sexual Coercion: A Differential Effectiveness Approach**. *Journal of Consulting & Clinical Psychology*, 69(3), 552-559. The authors evaluated a coeducational program for teenagers on preventing sexual coercion in dating situations. Students examined individual and social attitudes underlying coercive sexual behavior and learned communication skills aimed at preventing or dealing with unwanted sexual advances. Instruction was enhanced by video and an interactive video "virtual date." Outcomes were assessed using sexual attitude scales with a sample of 458 high school students. Student health education classes were randomly assigned to either a treatment or a control condition. Findings, based on a latent variable model of differential effectiveness, showed that students in the treatment group with initial coercive attitude scores at or above the mean benefited significantly more than students with the same range of scores in the control group. (PsycINFO Database Record [c] 2002 APA, all rights reserved) **[Research]**

Stern, Robin; Repa, J. Theodore. (2000). **A Study of the Efficacy of Computerized Skill Building for Adolescents: Reducing Aggression and Increasing Pro-Social Behavior**. ERIC NO: ED447792. This article describes a pilot study that evaluated the efficacy of a computer-based, behavioral skill-building program in reducing aggression and improving academic performance among middle school students. The program is Ripple Effects' "Relate for Teens," a media rich, interactive application based on combining a proprietary learning system with research-proven strategies for shaping social behavior. The study involved three groups of diverse seventh and eighth graders from a New York City public school—2 experimental groups of 17 students each and 1 control group of 23 students—over a 12-week period. One experimental group used the program as a stand-alone intervention; the other had the additional intervention of teacher-facilitated role-plays and discussion. The study examined whether the program worked in changing social behavior under either condition and whether it impacted academic performance. Results indicate that students in both experimental groups showed less aggressive behavior and more pro-social behavior when compared with the control group. Students in both experimental groups also had fewer referrals to remedial summer school. An unexpected finding was that students who used the program without teacher intervention and role-plays had greater increases in pro-social behavior and greater reduction in aggressive behaviors. However, the group with added teacher intervention had fewer remedial summer school referrals. A student observation assessment tracking form is appended. (ERIC Database) **[Research]**

## **Use of Interactive Media by Adolescents**

### **Patterns and Types of Use**

Hoge, John Douglas. (1996). **Observations on the Use of Computer and Broadcast Television Technology in One Public Elementary School**. Paper presented at the Annual Conference of the National Council for the Social Studies College and University Faculty Assembly (Washington, D.C., November 22, 1996). This paper provides participant observations regarding the use of computer and broadcast television technology at a suburban public elementary school in Athens, Georgia during the 1995-1996 school year. The paper describes the hardware and software available in the school, and the use and misuse of computers and broadcast television in the classroom. Word processing software was the most frequently used and productive classroom tool. Student misuses of computer technology included: inappropriate expectations, procrastination, and "digital delinquency" such as loading non-educational games, and typing inappropriate poems and stories. Teacher misuses of technology included: searching of the Internet during the class, without prior identification and previewing of sites, and the use of electronic fraction bars which were more easily used in their regular plastic form. The difficulties with a student-produced broadcast of the morning announcements are discussed. Conclusions from the year-long observation include: (1) infusions of hardware and software alone will prove to be educationally ineffective—ongoing teacher training and school level support are essential; (2) disadvantaged youth need greater access to computers during school hours than their more well-to-do peers who often have technology resources at home; and (3) legitimate educational goals derived from established curriculum guidelines must drive the use of electronic technology. (ERIC Database)

La Ferle, Carrie; Edwards, Steven M.; Lee, Wei-Na. (2000). **Teens' Use of Traditional Media and the Internet**. *Journal of Advertising Research*, 40(3), 55-65. 189 Ss (aged 14-19 yrs) completed a questionnaire designed to examine teens' relationships with media. Time allocation across media (television, reading, radio, Internet) and the needs (entertainment, research, homework, health education, shopping, leisure, news/current events) fulfilled by each medium were investigated. The study further explored how the Internet, given its ability for 2-way communication, stacks-up against interpersonal communication s. Influences of gender and home access to the Internet were analyzed, as were the methods teens use to learn about websites. Teens were found to spend the most amount of time listening to the radio, while the Internet was frequently used for school-related tasks. In general, teens' media choices were shown to vary by their needs. Overall, male and female uses of media were similar; however, gender differences were found on the needs fulfilled by the Internet. Results provide implications for effectively targeting the teen market. (PsycINFO Database Record [c] 2002 APA, all rights reserved) **[Research]**

Lazonder, A. W. (2000). **Exploring Novice Users' Training Needs in Searching Information on the WWW**. *Journal of Computer Assisted Learning*, 16(4), 326-335. Investigated the training needs of novice users in locating websites when searching for information on the World Wide Web (WWW). 14 pre-university students (mean age 15.3 yrs) comprising 7 novice and 7 experienced WWW-users performed 3 web search tasks, lasting 13 minutes each. Results show minimal performance differences between novice and experienced Ss. Experienced Ss required more time to select a strategy and choose successful strategies just as often as did novice Ss. On simple tasks, experienced Ss tended to be more proficient in selecting and executing a search strategy; however, these differences decreased as the search task became more complex. Novice Ss did not take full advantage of the search engine's potential, overlooking the "refine" and "broaden" commands and failing to use Boolean operators. As well, novice Ss rarely used system clues such as relevance ratings and "keywords found" to monitor search outcomes. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**



Roberts, Donald F. (1999). **Kids & Media @ the New Millennium: A Kaiser Family Foundation Report [with] Appendices. A Comprehensive National Analysis of Children's Media Use.** Henry J. Kaiser Family Foundation, Menlo Park, CA. This report presents details of a study which gathered information about all kinds of media behaviors from a nationally representative sample of American youth—the study asked: In this modern media environment, how much time do American children devote to each of the different media? According to the report, the data for the study came from two national samples: a nationally representative sample of 1090 children aged 2 through 7 years and a nationally representative sample of 2065 students in grades 3 through 12 (8-18 years). The report is divided into the following sections: (1) Introduction; (2) Methods; (3) The Media Environment (household media, personal media, constant television households, children's media environment: some generalizations); (4) Patterns of Daily Media Use; (5) Content Preferences (television content, video content, movie content, video games, computer games, chat rooms, web sites, popular music, magazine genres, book genres, newspaper content, print); (6) Contexts of Exposure; (7) Further Explorations (personal contentedness and social adjustment, media preferences, attitudes toward television and computers, school grades, heavy versus light media exposure); and (8) Summary and Conclusions. Contains 90 tables of data and 36 references. A separate Appendix section with additional data is included: Appendix A deals with methodology; Appendix B details a media use diary; Appendix C contains toplines; Appendix D deals with media genres. (ERIC Database)

Ryan, Sara. (2000). **Tag Team Tech: "I'm Trying to Learn and Listen and Make Myself Heard.": What (Some) Teens Really Do Online.** Voice of Youth Advocates, 23(2), 93. Presents a sample of comments from the Young Adult Library Services Association's Teen Hoopla Web site regarding what teens do while they are online. Concludes that teens want sites designed for them; they want to communicate; and they resent it when people assume the worst about their Internet use. (ERIC Database)

Teo, Thompson S. H.; Lim, Vivien K. G. (1998). **Usage and Perceptions of the Internet: What Has Age Got to Do With It?** CyberPsychology & Behavior, 1(4), 371-381. Examined the effects of age on Internet usage patterns, perceptions of the Internet, activities performed on the Internet, and factors affecting an enjoyable Internet experience. 1,369 Internet users (aged <16-40+ yrs) completed a questionnaire posted on the Internet concerning: (1) daily Internet use; (2) frequency of use for messaging, browsing, downloading, and purchasing; (3) perceived ease of use; (4) perceived usefulness; and (5) perceived enjoyment in using the Internet. Results show that most Internet users were youth (aged <21 yrs) or young adults (aged 21-30 yrs). Browsing and messaging activities were generally carried out more frequently than were downloading and purchasing activities. Generally, age did not exert an effect on perceived ease of use, and had only a minor effect on perceived enjoyment. The most widely cited factor affecting an enjoyable Internet experience was the amount of time required to view or download Web pages. Young adults and mature adults (aged 30 yrs) generally perceived the Internet to be more useful. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

### **Access and the Digital Divide**

Becker, Henry J. (2000). **Who's Wired and Who's Not: Children's Access to and Use of Computer Technology.** The Future of Children, 10(2): 44-75. Concerns have been raised about the “digital divide” between children who have access to computer technology and those who don't. Findings are presented from a new analysis of data from a national survey of 4,000 teachers that describes children's differential access to computers at home and in school. Both in school and at home, high-income children were reported to have greater access to computers. Although only 22% of low-income children (<\$20K annual family income) had access to a home computer, 91% of high-income children (>\$75K annual family income) had a computer at home. Furthermore, computer use was found to be less among low-income children, even when there was a computer in the home. The authors conclude that schools have a key role

to play in assuring equal opportunities for low-income children to access the benefits of computer technology. (Editor) [Research]

Miller, Leslie M.; Schweingruber, Heidi; Brandenburg, Christine L. (2001). **Middle School Students' Technology Practices and Preferences: Re-Examining Gender Differences**. *Journal of Educational Multimedia & Hypermedia*, 10(2), 125-140. Studied gender gaps with regard to computer access, use, and perceived expertise. Survey data from 512 middle school students reveal that these gaps are narrowing significantly. Authors attribute these findings to self-perception of computer skills and their acquisition, exposure to technology at home and at school, and media style and content preferences. The conclusions suggest that the rapidity with which acculturation to the Web is taking place among America's youth may be responsible for less gender-biased technology outcomes in schools and, eventually, in the work force. (PsycINFO Database Record [c] 2000 APA, all rights reserved) [Research]

Roberts, Donald F. (2000). **Media and Youth: Access, Exposure, and Privatization**. *Journal of Adolescent Health*, 27(2 Suppl): 8-14. The purpose of this study was to describe the access of youth in the U.S. to the fully array of media, and to describe the social contexts in which media exposure occurs. Study participants were a cross-sectional national random sample of 2,065 adolescents aged 8 through 18 years, with an oversample of African-American and Hispanic youth. Participants completed a questionnaire about their use of various types of media. Results indicate that youth in general have very high exposure to media, with respondents reporting an average 6.75 hours of media exposure daily. Nearly all of the participants (97%) indicated that their households had televisions, 70% had video game players, and more than two-thirds had computers. (Editor) [Research]

Tell, Carol. (2000). **Generation What? Connecting with Today's Youth**. *Educational Leadership*, 57(4), 8-13. The distinguishing feature of today's youth is not technology, but aloneness. To reconnect with young people, educators should close the gap between school offerings and solitary net-surfing activities by offering computer gaming courses and guidance on approaching violent Internet imagery. Adult and youth cultures are interdependent. (ERIC Database)

Yelland, Nicola; Lloyd, Margaret. (2001) **Virtual Kids of the 21st century: Understanding the Children in Schools Today**. *Information Technology in Childhood Education Annual*, 13, 175-192. Reports on a study in which 934 children, ranging from 10 to 13 yrs, were interviewed about their ownership, use, and views of computer and video games. Computer games are viewed as an important part of the lives of children and we need to understand their impact and relevance to the children who inhabit our classrooms. The results of the study both confirm existing data indicating major gender differences in ownership, use, and preferences and highlight that students enjoy playing computer and video games and that they also enjoy a range of other activities as well as games. The results have important implications for those who design curriculum and learning opportunities in schools. In home contexts, children now use information and communication technologies (ICTs) extensively. If education systems continue to ignore the potential of ICTs for learning experiences, they are in danger of being regarded as Neolithic by those who experience them, and this should be a grave of concern to those who are responsible for educating the next generation for the information age. (PsycINFO Database Record [c] 2002 APA, all rights reserved) [Research]

### Accessing Health Information

Borzekowski, DL; Rickert, VI. (2001). **Adolescent Cybersurfing for Health Information: A New Resource That Crosses Barriers**. Archives of Pediatrics & Adolescent Medicine, 155(7): 813-7. This article presents the findings from a cross-sectional school-based survey of 412 suburban New York 10<sup>th</sup> graders who were asked about their use of and attitudes toward accessing health information through the Internet. Half of the respondents indicated that they had used the Internet to get health information on such topics as sexually transmitted disease, diet and fitness, and sexual behaviors. Adolescents reported that they found this information to be of high value, particularly for accessing information about sensitive health issues. (Editor) [Research]

Borzekowski, Dina L. G.; Rickert, Vaughn I. (2001). **Adolescents, the Internet, and Health: Issues of Access and Content**. Journal of Applied Developmental Psychology, 22(1), 49-59. As the Internet grows in popularity and importance, many have raised concerns over access and content, especially with regard to young people and health information. This article begins with a brief discussion on Internet access issues. It follows with a section addressing Internet health content and provides a critique of 3 examples of current Internet health Web sites. Data are then presented from a preliminary survey on the Internet use of 2 distinct samples of New York City adolescents (N = 319). It was found that adolescents of dissimilar socioeconomic and ethnic groups access and use the Internet, with a large percentage seeking health information. The authors conclude with recommendations for future health Web sites targeting adolescents. (PsycINFO Database Record [c] 2000 APA, all rights reserved) [Research]

Izenberg N; Lieberman DA. (1998). **The Web, Communication Trends, and Children's Health. How Children Use the Web**. Clin Pediatr, 37(6): 335-40. Children are embracing the Internet and the World Wide Web. How are they using it and what do they find? This article, the fourth in a five-part series, explores the "whys" and the "wherefores" of children's Web use. Included are online recourses geared specifically for children, including health, educational, and entertainment sites. (PsycINFO Database Record [c] 2002 APA, all rights reserved)

### Playing Video Games

Buchman, Debra D.; Funk, Jeanne B. (1996). **Video and Computer Games in the '90s: Children's Time Commitment and Game Preference**. Children Today, 24(1), 12-15, 31. Examined electronic game-playing habits of 900 children. Found that time commitment to game-playing decreased from fourth to eighth grade. Boys played more than girls. Preference for general entertainment games increased across grades while educational games preference decreased. Violent game popularity remained consistent; fantasy violence was more preferred by girls than by boys, who preferred human and sports violence games. (ERIC Database)

Griffiths, Mark. (1997). **Computer Game Playing in Early Adolescence**. Youth and Society, 29(2), 223-37. Surveyed 147 11-year-olds about their reasons for playing computer games. Most played for fun, for a challenge, and because their friends did. For most adolescents, computer game playing is a fairly absorbing and harmless activity, but for a few it poses problems when game playing consumes too much time. (ERIC Database) [Research]

Phillips, Carol A.; Rolls, Susan; Rouse, Andrew; Griffiths, Mark D. (1995). **Home Video Game Playing in Schoolchildren: A Study of Incidence and Patterns of Play**. Journal of Adolescence, 18(6), 687-691. Attempted to quantify the extent of home video game playing in a typical population of 11-16 yr olds (429 males and 387 females). 77.2% of the Ss played video games. The most common pattern of

play was daily, with most of the players playing for between 0.5 and 1.0 hr/day. A small population of players (7. 5%) was identified whose behavior might be considered to be addictive. This group played significantly more to avoid doing other activities than for any other reason. Significant gender differences indicate that males were more likely to admit to playing, played longer, played more often, and were more likely to report neglecting homework to play and feeling better after play. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

### **Attitudes and Beliefs about Interactive Media**

**Attitudes and Opinions From the Nation's High Achieving Teens: 29th Annual Survey of High Achievers.** (1998). Who's Who among American High School Students, Lake Forest, IL. This report presents the 1998 statistical findings of the annual survey to determine the attitudes of national high school student leaders. Questionnaires were completed by 3,123 high school juniors and seniors, all of whom were selected for recognition in "Who's Who among American High School Students." In addition to demographic information, the report details responses regarding the following areas of student life and contemporary issues: (1) education; (2) school violence; (3) weapons and violence; (4) Clinton-Lewinsky affair; (5) attitudes toward media; (6) sexual harassment and assault; (7) cheating/misconduct; (8) sexual behavior and attitudes; (9) condom distribution in school; (10) abortion; (11) cigarettes, alcohol and drugs; (12) peer pressure; (13) teen trends; (14) parental involvement; (15) future/aspirations; (16) important influences; (17) family meal time; (18) happiness; (19) suicide; (20) Internet usage; (21) extracurricular activities; (22) generation's greatest crisis; (23) prejudice; (24) sexual orientation; and (25) affirmative action. (ERIC Database) **[Research]**

Capella, Elise. (2000). **What Children Think About Computers.** Future of Children, 10(2), 186-191. Examined children's and teens' experience with and perceptions of computer technology by surveying 72 5-18 yr olds from Plugged In and The Computer Clubhouse. Responses indicate that children participate in a variety of computer-based activities ranging from traditional educational projects, such as writing, doing research for school, and benefiting from homework help, to writing email, chatting online, programming, and creating Web pages. Favorite activities included playing games, drawing pictures, writing letters, and surfing the Web. Respondents stated that problems they came across included time it takes to boot up and go online, react to commands, complete downloads, and computers freezing and crashing. Nearly all of the respondents reported that they valued the role of computers in their lives. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

Crombie, Gail; Armstrong, Patrick Ian. (1999). **Effects of Classroom Gender Composition on Adolescents' Computer-Related Attitudes and Future Intentions.** Journal of Educational Computing Research, 20(4), 317-27. Describes a study that examined differences in computer-related attitudes and future intentions between females in an all-female class and males and females in mixed-gender classes. Results of this study conducted in grade 11 computer science courses indicate that an all-female environment may enhance the learning experiences of female students. (ERIC Database) **[Research]**

Dibenedetto, Mary Gina. (2000). **Preadolescent Girls' and Boys' Attributions for Computer Experiences.** Dissertation Abstracts International Section A: Humanities & Social Sciences, 61(6-A), 2182. This study investigated the attributions preadolescent children make to computer experience. The author developed both the Computer Experience Survey (to assess children's level of computer experience) and the Computer Achievement Responsibility Survey (CARS; an attributional instrument based on the School Achievement Responsibility Survey and derived from Weiner's 1976 theoretical model of attribution of ability, effort, task difficulty-ease, and luck). The CARS was used to assess the attributions children made to hypothetical successful and failure computer scenarios, and students were assigned to low, middle, or high computer experience categories based on the Computer Experience

Survey. The study's purpose was threefold: (a) to investigate whether gender differences exist in middle school students' computer experiences, (b) to explore whether these students' computer experiences influence the attributions they make to successful and failure computer scenarios, and (c) to investigate whether the specific type of computer task (computer games, word processing, or educational computer games) affects those attributions. Two hundred students from three school districts responded to both surveys. The Computer Experience Survey found that boys spent significantly more time at home playing computer games, and exploring the Internet than the girls, who spent significantly more time at home word processing. No gender differences were found in school computer use. The CARS found some significant differences in attributions made to successful and failure computer scenarios. Boys agreed to a greater extent with stable (ability and task difficulty-ease) attributions to successful overall, computer game, and word processing scenarios than girls. High computer experienced students agreed to a greater extent with ability attributions to successful overall, and word processing scenarios than less experienced students. Low computer experienced students agreed to a greater extent with ability attributions to failure overall, and computer game scenarios than their more experienced counterparts. No significant interaction effects were found for the variables of gender, computer experience, and attributions to overall and content specific computer scenarios. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

Ebersole, Samuel. (2000). **Uses and Gratifications of the Web Among Students**. Journal of Computer-Mediated Communication, 6(1), np. Examined how some 6<sup>th</sup>-12<sup>th</sup> grade students in 10 public schools view the world wide web (WWW) and assessed how their attitudes and opinions affect their use of this new medium in an educational context. A total of 123,071 URLs were collected from the computers used to administer the computer survey instrument. These were reduced to a total of 500 sites that were reviewed by media specialists. Students were found to be visiting commercial sites at a much higher proportion than those in other domains. Also, the commercial sites received the lowest rating for "suitability for academic research" of all the domain names. While students reported their purpose for using the WWW as "research and learning" 52% of the time, the coders found only 27% of the sampled sites to be "suitable" for that purpose. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

Friedman, Batya. (1997). **Social Judgments and Technological Innovation: Adolescents' Understanding of Property, Privacy, and Electronic Information**. Computers in Human Behavior, 13(3), 327-51. Describes two complementary studies that were conducted to understand the diverse views adolescents hold regarding electronic information. One study examined high school students' concepts of property pertaining to copying computer programs; the other examined concepts of privacy pertaining to accessing computer files. (ERIC Database) **[Research]**

## **Effects and Influences of Interactive Media**

### **General Reviews**

Cesarone, Bernard. (1998). **Video Games: Research, Ratings, Recommendations**. ERIC Digest. ERIC Clearinghouse on Elementary and Early Childhood Education, Champaign, IL. This Digest reviews research on the demographics and effects of video game playing, discusses game rating systems, and offers recommendations for parents. The Digest begins by discussing research on the time children spend playing electronic games, which shows that younger children's game playing at home (90% of fourth-graders played at least one hour per week, according to one study) decreases in favor of game playing in arcades as they get older. Studies also consistently show that boys play more electronic games than girls, although girls perceive themselves to have peer approval for moderate amounts of game playing, and both boys and girls enjoy violent electronic games. The Digest then discusses research on the effects of playing

violent games. Studies tend to show an increase in arousal and aggression in subjects who have played a violent versus a nonviolent game, although there may still be insufficient laboratory research to support strong causal statements about the effects of violent games on children's aggression. The Digest describes research on other effects of electronic game playing, such as the link between heavy game playing or playing of violent games and self-concept. Following a discussion of two electronic game rating systems, devised by the Recreational Software Advisory Council and the Entertainment Software Rating Board, the Digest offers parents recommendations for managing their children's game playing. Recommendations include knowing the content and procedures of the games, paying attention to game ratings, establishing explicit game-playing guidelines, and educating children about the difference between media and real-life violence. (ERIC Database)

Dorman, Steve M. (1997). **Video and Computer Games: Effect on Children and Implications for Health Education.** *Journal of School Health*, 67(4), 133-38. Video and computer games have assumed a prominent role in the culture of U.S. children and adolescents. The paper examines the health effects of these games, suggests criteria upon which parents and teachers may evaluate the games, and notes some implications for health educators. (ERIC Database)

Funk, Jeanne B.; Germann, Julie N.; Buchman, Debra D. (1997). **Children and Electronic Games in the United States.** *Trends in Communication*, 2, 111-26. Reports video game playing demographics. Reviews the literature on video game health hazards and positive health applications; cutting-edge applications in education and controversies about learning; and effects on personality. Discusses laboratory and survey research on the effects of video games violence. Considers whether some children may be at high risk for negative effects from playing video games. (ERIC Database)

Strasburger, Victor C. (1995). **Adolescents and the Media: Medical and Psychological Impact.** *Developmental Clinical Psychology and Psychiatry*, Vol. 33. Thousand Oaks, CA, US: Sage Publications. (from the cover) "Adolescents and the Media" provides a state-of-the-art review of research findings on the influence of such media as TV, movies, video games, print advertising, rock music, and music videos on adolescents. Beginning with a theoretical and conceptual background of adolescent development, the book covers findings on violence, sexual activity, substance abuse, and eating disorders, and makes a clear case that media play a distinct role in diverse facets of at-risk behavior and adjustment. This book concludes with recommended strategies for preventing adverse media effects on youth. (PsycINFO Database Record [c] 2002 APA, all rights reserved)

Strasburger, Victor; Donnerstein, Edward. (2000). **Children, Adolescents, and the Media in the 21st Century.** *Adolescent Medicine: State of the Art Reviews*, 11(1): 51-68. Although there is a body of research on the potential negative effects of the media on children and adolescents (e.g., the impact of media violence), there is little research examining the use of the Internet by adolescents and its potential behavioral impact. Concerns are raised and suggestions made regarding possible strategies for addressing them (e.g., stricter regulation by parents, better programming, media education). (Editor)

Subrahmanyam, Kaveri; Greenfield, Patricia; Kraut, Robert; Gross, Elisheva. (2001). **The impact of Computer Use on Children's and Adolescents' Development.** *Journal of Applied Developmental Psychology*, 22(1), 7-30. In recent years, electronic games, home computers, and the Internet have assumed an important place in our lives. This paper presents a review of the research on the impact of home computer use on the development of children and adolescents. Time use data are presented along with a discussion of factors such as age, gender, and ethnicity, which impact the time spent on computers as well as the activities engaged in. Research on the impact of computer use on cognitive skill and academic development, social development and relationships, and perceptions of reality and violent behavior is reviewed. The special role of the Internet in the lives of adolescents is brought out using data from the HomeNet study. The paper concludes with recommendations for future study in order to better

understand the growing impact of computers on our youth. (PsycINFO Database Record [c] 2001 APA, all rights reserved)

Subrahmanyam, Kaveri; Kraut, Robert E.; Greenfield, Patricia M.; Gross, Elisheva F. (2000) **The Impact of Home Computer Use on Children's Activities and Development**. *Future of Children*, 10(2), 123-144. Notes that although research on the effects of children's use of home computers is still sketchy and ambiguous, some initial indications of positive and negative effects are beginning to emerge. This article begins by describing the increasing amount of time children spend on home computers and the impact of computer use on other activities. This discussion is followed by a survey of the available research about the effects of home computer use on children's activities and development in 4 areas: (1) physical well-being, (2) cognitive and academic skill development, (3) social development and relationships, and (4) perceptions of reality. The article closes with a summary of the issues requiring further study to better understand what can be done to ensure that children's use of home computers has a positive impact on their lives. (PsycINFO Database Record [c] 2002 APA, all rights reserved)

Villani, Susan. (2001). **Impact of Media on Children and Adolescents: A 10-Year Review of the Research**. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40(4), 392-401. Reviews research literature published within the past 10 yrs regarding the impact of media on children and adolescents. Media categories researched with computer technology included television and movies, rock music and music videos, advertising, video games, and computer and the Internet. Research prior to 1990 documented that children learn behaviors and have their value systems shaped by media. Media research since has focused on content and viewing patterns. The primary effects of media exposure are increased violent and aggressive behavior, increased high-risk behaviors, including alcohol and tobacco use, and accelerated onset of sexual activity. The newer forms of media have not been adequately studied, but concern is warranted through the logical extension of earlier research on other media forms and the amount of time the average child spends with increasingly sophisticated media. (PsycINFO Database Record [c] 2002 APA, all rights reserved)

### **Aggression and Violence**

Anderson, Craig A.; Bushman Brad. (2001) **Effects of Violent Video Games on Aggressive Behavior, Aggressive Cognition, Aggressive Affect, Physiological Arousal, and Prosocial Behavior: A Meta-Analytic Review of the Scientific Literature**. *Psychological Science*, 12(5), 353-359. Notes that research on exposure to television and movie violence suggests that playing violent video games will increase aggressive behavior. In this study the authors examine the role that violent video games have on aggressive behavior. A literature search was conducted on PsycINFO for all entries through the year 2000. A meta-analytic review of the video-game research literature reveals that violent video games increase aggressive behavior in children and young adults. Experimental and non-experimental studies with males and females in laboratory and field settings support this conclusion. Analyses also reveal that exposure to violent video games increases physiological arousal and aggression-related thoughts and feelings. Playing violent video games also decreases prosocial behavior. (PsycINFO Database Record [c] 2002 APA, all rights reserved) **[Meta-analysis]**

Bensley, Lillian; Van Eenwyk, Juliet. (2001). **Video Games and Real-Life Aggression: Review of the Literature**. *Journal of Adolescent Health*, 29(4), 244-257. Reviews the scientific literature (1984-2000) to determine whether evidence supports a public health concern that violent video games (VGs) contribute to real-life aggression. To summarize the research findings, 4 features were identified for each study: (1) study design, (2) ages of Ss, (3) a VG variable, and (4) the type(s) of measures of aggression used. Nine studies were identified for preschool and elementary school students, 10 studies were identified for middle and high school students, and 10 studies were identified for college students and

young adults. Among young children (4-8 yr olds), playing an aggressive VG caused increased aggression or aggressive play during free-play immediately after the VG in 3 of 4 studies. For adolescents, because of the nonexperimental designs and mixed results of the studies, it was not possible to determine whether VG violence affects aggressive behavior in this age group. Among college students, there is no consistent evidence that VG play affects aggression or hostility. One recent study of college students showed increased aggression in a laboratory task after violent VG play (C. A. Anderson and K. E. Dill, 2000). Gender differences in the ability of violent VGs to cause subsequent aggression were not found in experimental studies. (PsycINFO Database Record [c] 2002 APA, all rights reserved)

Cantor, Joanne. (2000). **Media Violence**. Journal of Adolescent Health, 27(2 Suppl): 30-4. Research on the effects of media violence is not well understood by the general public. Despite this fact, there is an overwhelming consensus in the scientific literature about the unhealthy effects of media violence. The author presents a summary of what is known about the effects of media violence. Viewing of media violence has consistently been shown to have negative effects, including higher levels of anti-social behavior, desensitization to violence, and intense fear in children. Recommendations for areas of future research are made. (Editor)

Dill, Karen E.; Dill, Jody C. (1998). **Video Game Violence: A Review of the Empirical Literature**. Aggression & Violent Behavior, 3(4), 407-428. The popularity of video games, especially violent video games, has reached phenomenal proportions. The theoretical line of reasoning that hypothesizes a causal relationship between violent video game play and aggression draws on the very large literature on media violence effects. Additionally, there are theoretical reasons to believe that video game effects should be stronger than movie or television violence effects. This paper outlines what is known about the relationship between violent video game playing and aggression. The available literature on virtual reality effects on aggression is discussed as well. The preponderance of the evidence from the existing literature suggests that exposure to video game violence increases aggressive behavior and other aggression-related phenomena. However, the paucity of empirical data, coupled with a variety of methodological problems and inconsistencies in these data, clearly demonstrate the need for additional research. (PsycINFO Database Record [c] 2000 APA, all rights reserved)

Funk, Jeanne B; Hagan, J; Schimming, J; Bullock, WA; Buchman, DD; Myers, M. (2002). **Aggression and Psychopathology in Adolescents with a Preference for Violent Electronic Games**. Aggressive Behavior, 28, 134-144. Associations between a preference for violent electronic games and adolescents self-perceptions of problem behaviors and emotions were examined. It was predicted that a preference for violent games would be associated with negative externalizing characteristics, in particular aggressive emotions and behaviors, on the Youth Self-Report (YSR), a standardized self-report measure of adolescent problem behaviors. Thirty-two 11- through 15-year-olds (17 girls) listed and categorized favorite electronic games into one of six predetermined categories and completed the YSR. MANOVA revealed significant relationships between a preference for violent games and the Thought Problems subscale ( $P < .01$ ) and YSR Total Score ( $P < .05$ ), with trends noted for the Internalizing ( $P < .06$ ) and Anxious-Depressed ( $P < .08$ ) subscales. Expected relationships with externalizing behaviors, including aggression, were not found. However, across all YSR subscales, children with higher preference for violent games had more clinically significant elevations than those with low preference for violent games. On the Total Problems subscale, of the eight children receiving scores in the clinically significant range, six were in the High preference group (three boys and three girls). The failure to find the expected relationships between a preference for violent games and aggressive, externalizing behaviors is puzzling. It is possible that individuals with a preference for violent games may have high exposure to all forms of media violence. Their perceptions of their own behavior, in comparison, may not seem sufficiently aggressive to justify endorsement of problems in this area. Or, playing violent electronic games may promote a disconnection between the emotions normally associated with violence and violent acts. These



explanations are consistent with a desensitization model where exposure to media violence decreases sensitivity to aggression. (PsycINFO Database Record [c] 2002 APA, all rights reserved) **[Research]**

Griffiths, Mark. (1999). **Violent Video Games and Aggression: A Review of the Literature.** *Aggression & Violent Behavior*, 4(2), 203-212. One of the main concerns that has constantly been raised against video games is that most of the games feature aggressive elements. This has led many people to assert that this may have a detrimental effect on individuals who play such games. Despite continuing controversy for over 15 yrs, there has been little in the way of systematic research. This article reviews the empirical studies in this area, including research methodologies such as the observation of free play, self-report methods, and experimental studies. The article argues that all the published studies on video game violence have methodological problems and that they only include possible short-term measures of aggressive consequences. The one consistent finding is that the majority of the studies on very young children—as opposed to those in their teens upwards—tend to show that children do become more aggressive after either playing or watching a violent video game. However, all of these come from the use of 1 particular research methodology (i.e., observation of children's free play). (PsycINFO Database Record [c] 2002 APA, all rights reserved)

Griffiths, Mark. (1997). **Video Games and Aggression.** *Psychologist*, 10(9), 397-401. Notes that video games might have the capacity to promote aggressive tendencies (as predicted by social learning theory) or to release aggressive tendencies (as predicted by catharsis theory). To put the debate concerning whether there is a possible "aggression" link between video games and children's subsequent behavior into an empirical context, the author examines observational studies, self-report studies, experimental studies, and other studies. The evidence suggests that there is more empirical evidence supporting social learning theory than catharsis theory, particularly in younger children. However, there is much speculation as to whether the procedures to measure aggression levels are valid and reliable. There is also the question of developmental effects, whether the social context of playing may affect the results, and problems concerning the definition of "violent" or "aggressive." The question of whether video games promote aggressiveness cannot be answered at present because the available literature is relatively sparse and conflicting, and there are many different types of video games that probably have different effects. (PsycINFO Database Record [c] 2000 APA, all rights reserved)

Huesmann, L. Rowell; Moise, Jessica F.; Podolski, Cheryl Lynn. (1997). **The Effects of Media Violence on the Development of Antisocial Behavior.** Stoff, David M., Breiling, James, et al. (Eds.); *Handbook of Antisocial Behavior*. (pp. 181-193). New York, NY, US: John Wiley & Sons, Inc. (from the chapter) Reviews most of the empirical research relevant to understanding how violence on television, in film, in music videos, in video games, and on the news can engender violent behavior in the audience. Sets the stage by reviewing the demographic trends in violent behavior and youth exposure to media by summarizing the psychological theory that appears most relevant for understanding the development of individual differences in aggressive behavior, and by describing the roles that the observation of media violence might play in that development. (PsycINFO Database Record [c] 2000 APA, all rights reserved)

Sherry, John L. (2001). **The Effects of Violent Video Games on Aggression: A Meta-Analysis.** *Human Communication Research*, 27(3), 409-431. Presents a meta-analysis concerning the relationship between violent video games and aggression. 32 studies published during the period 1975-2000 were examined concerning the effects of violent video game play on aggression in children, adolescents, and young adults (aged 4-22 yrs). Results show the effect of violent video game play on aggression to be less significant than the effect of viewed television violence on aggression. The type of violence contained in games predicted the level of aggression, with fantasy violence and violence portrayed against humans affecting aggression more than sports violence. Longer playing time resulted in lower measures of aggression. (PsycINFO Database Record [c] 2002 APA, all rights reserved) **[Meta-analysis]**

### Sexual Risks, Behaviors, and Attitudes

Finkelhor, David; Mitchell, Kimberly J.; Wolak, Janis. (2000). **Online Victimization: A Report on the Nation's Youth**. National Center for Missing and Exploited Children, Alexandria, VA, Crimes Against Children Research Center, Durham, NH. Nearly 24 million youth, ages 10 through 17, were online regularly in 1999. Large numbers of young people, when on the Internet, are encountering sexual solicitations they do not want, sexual material they did not seek, and people who threaten and harass them. A national survey described in this paper and administered to 1,501 young people, ages 10 through 17, confirms many of these stories. It represents the first scientifically based window into the risks youth face on the Internet, particularly unwanted sexual solicitations and pornography. It includes information on how families and young people are addressing matters of danger and protection on the Internet, and suggests that although these unpleasant experiences affect a large number of youth, few families do much about it. The report questions how to temper some of the drawbacks of the Internet to protect young people, and highlights the need for public and private initiatives to raise awareness and provide solutions. It suggests that strategies to respond to the problem would aim to reduce offensive behavior, better shield young people from its likely occurrence, increase the level of reporting, and provide more help to youth and families to protect them from any consequences. (ERIC Database) [Research]

Freeman-Longo, Robert E. (2000). **Children, Teens, and Sex on the Internet**. Sexual Addiction & Compulsivity, 7(1-2), 75-90. There is a growing number of Internet users and access to an increasing number of web sites by underaged persons. This article uses Grounded Theory to address (a) the limited but growing knowledge of the area, (b) ways in which children and teens can access this material, (c) positives and negatives associated with developing online relationships that can become sexual, (d) the growing concerns regarding children's access to adult-oriented materials including sexual addiction, and (e) the potential short- and long-term affects. This article also addresses recommendations for the future regarding ways to guide youth about the potential hazards associated with the use of online adult-oriented web sites, ways to reduce the incidence of children and teens accessing these materials, and useful prevention strategies. (PsycINFO Database Record [c] 2000 APA, all rights reserved)

Knight, Myra Gregory. (2000). **Mass Media, Sexual Attitudes and Sexual Behaviors Among Teens**. Dissertation Abstracts International Section A: Humanities & Social Sciences, 61(4-A), 1208. Does mass media use among adolescents contribute to their attitudes about sexuality and their sexual behaviors? That question was the focus of this study, which also examined possible mechanisms for such effects and weighed the relative contributions of television and more sexually suggestive media. The study employed cross-sectional data from the National Longitudinal Study of Adolescent Health. The 6,504-case sample is representative of U.S. high school students enrolled in 1995. Responses were analyzed using standard multiple regression and logistic regression. Dependent variables included perceived benefits of sexual activity, perceived obstacles to contraceptive use, and perceived consequences of pregnancy. Behavioral variables were sexual debut, effective condom use with first/last intercourse, and pregnancy. Media variables included measures of television viewing, radio listening, video use, video game playing, and combinations of those measures. Findings offered little support for cultivation theory, the idea that television, through its unique accessibility and comprehensibility, can shape audiences' views of the world. Television viewing alone was not linked with any of the sexual attitudes tested. Evidence was stronger that sexually suggestive media use (radio and videos) and total media use (television, radio, videos and video games) were linked with sexual attitudes. Specifically, the more often adolescents used sexually suggestive media, the more they agreed that sexual activity is beneficial. And the more often they used media, the more they agreed that sexual activity is beneficial. However, television viewing was linked with increased risk of sexual debut, as was sexually suggestive media use. The more often adolescents used these types of media, the greater their risk of sexual debut. Contrary to expectations, sexually suggestive media use also was linked with a decreased risk of teen pregnancy. The study also provided evidence that sexually suggestive media can contribute to sexual behavior independently, rather

than through a mediating attitudinal variable. Adolescents' use of sexually suggestive media, including cable television, the Internet and R- and X-rated movies, merits additional study. Also, because of music's popularity among teens, the music industry should be explored further as a channel for promoting sexual responsibility. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

Mitchell, Kimberly J.; Finkelhor, David; Wolak, Janis. (2001). **Risk Factors for and Impact of Online Sexual Solicitation of Youth**. Journal of the American Medical Association, 285(23), 3011-3014. Assessed the risk factors surrounding online sexual solicitations of youth and distress due to solicitation. A random sample of 1,501 youth (aged 10-17 yrs) who were regular Internet users were surveyed via telephone during August 1999-February 2000. Main outcome measures included demographic and behavioral characteristics associated with solicitation risk and distress due to solicitation. 19% of youth who used the Internet regularly were the targets of unwanted sexual solicitation in the last year. Girls, older teens, troubled youth, frequent Internet users, chat room participants, and those who communicated online with strangers were at greater risk. 25% of the solicited youth reported high levels of distress after solicitation incidents. Risk of distress was more common among the younger youth, those who received aggressive solicitations (the solicitor attempted or made offline contact), and those who were solicited on a computer away from their home. It is concluded that health care professionals, educators, and parents should be prepared to educate youth about how to respond to online sexual solicitations, including encouraging youth to disclose and report such encounters and to talk about them. (PsycINFO Database Record [c] 2002 APA, all rights reserved) **[Research]**

Thornburgh, D.; Lin, H. (Eds.) (2002). **Youth, Pornography, and the Internet**. Washington, DC: National Academy Press. A committee of experts convened by the National Academy of Sciences National Research Council concludes that no single approach—technical, legal, social, or educational—will be sufficient to protect children from online pornography. The report describes social and educational strategies, technology-based tools, and legal and regulatory approaches that can be mixed and matched to fit circumstances of different communities. The committee notes that an essential element of protecting children from inappropriate material on the Internet is the promotion of social and educational strategies that teach children to make wise choices about using the Internet and to take control of their online experiences. The report provides a practical guide for parents, teachers, librarians, information technology vendors and service providers, and public policy-makers. Available online at [www.nap.edu](http://www.nap.edu). (Editor)

Zillmann, Dolf. (2000). **Influence of Unrestrained Access to Erotica on Adolescents' and Young Adults' Dispositions Toward Sexuality**. Journal of Adolescent Health, 27(2 Suppl): 41-4. The new media technology makes erotica accessible to users of all ages, including children and adolescents. However, little is known about the consequences of increasing amounts of exposure. This article presents a brief overview of what we know, what we don't know, what we should know, and what we could know about the effects of pornography on children, adolescents, and young adults. A program of research is outlined. (Editor)

### **Mental and Social Health Effects**

Funk, Jeanne B.; Buchman, Debra D. (1996). **Children's Perceptions of Gender Differences in Social Approval for Playing Electronic Games**. Sex Roles, 35(3-4), 219-232. Gender differences characterize children's commitment to playing electronic games and are consistent with common stereotypes that may be triggered by their context and content. If conforming to gender stereotypes in electronic game playing maintains social approval, then those children who choose alternate playing patterns risk social sanction. The present study was designed to characterize children's views of gender differences in social approval for electronic game playing. A questionnaire was administered to 364 4th and 5th graders. Approximately 12% of the students represented minorities, and the majority were African-American. Children responded

to 14 statements describing the social acceptability by gender of certain playing habits. Results identified important gender and grade differences. Many children endorsed statements indicating that social approval for game playing is consistent with common gender stereotypes. The most striking gender differences in perceived social approval were found in statements referencing "fighting games." Children whose game playing deviates from approved patterns may represent a group of "high-risk" electronic game players. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

Funk, Jeanne B.; Buchman, Debra D. (1996). **Playing Violent Video and Computer Games and Adolescent Self-Concept**. *Journal of Communication*, 46(2), 19-32. Adolescents are primary consumers of video and computer games, and the games they prefer are often violent. Related research suggests that exposure to media violence may affect attitudes and behavior. Self-concept is a key indicator of core attitudes and coping abilities, particularly in adolescents. This study documents current adolescent electronic game-playing habits, and explores associations among preference for violent games, frequency and location of play, and self-concept. Study participants were 174 male and 183 female 7th and 8th grade students. Multivariate analyses identified marked gender differences in game-playing habits and in scores on the Harter Self-Perception Profile for Adolescents. For girls, more time playing video or computer games was associated with lower Harter scores on 6 subscales, including self-esteem. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

Funk, Jeanne B.; Buchman, Debra D.; Germann, Julie N. (2000). **Preference for Violent Electronic Games, Self-Concept and Gender Differences in Young Children**. *American Journal of Orthopsychiatry*, 70(2), 233-241. Electronic game-playing has been linked to adjustment problems in player subgroups. This study examined relationships among time commitment, gender, preference for violent games, and self-concept in 364 4th and 5th graders. Main effects were identified for game preference and gender, with stronger preference for violent games being associated with lower self-perceived behavioral conduct. Implications for future research are discussed. (PsycINFO Database Record [c] 2002 APA, all rights reserved) **[Research]**

Greenfield, Patricia M.; Cocking, Rodney R. (Eds.). (1996). **Interacting with Video**. *Advances in Applied Developmental Psychology*, Vol. 11. Stamford, CT: Ablex Publishing Corp. (from the preface) The authors [of this volume] address a number of significant issues related to the role of interactive media in the emotional, social, and intellectual life of [children, adolescents, and young adults]. The electronic media on which this volume focuses include video games and virtual reality games. (from the cover) What are the effects of media such as video games and virtual reality on development? This volume examines this question in 3 conceptually distinct parts: What are the developmental effects of interactive media content? What are the developmental effects of interactivity itself? What are the developmental effects of interactive media forms? (PsycINFO Database Record [c] 2000 APA, all rights reserved)

Griffiths, Mark. (1997). **Friendship and Social Development in Children and Adolescents: The Impact of Electronic Technology**. *Educational & Child Psychology*, 14(3), 25-37. Examines the impact of interactive electronic technology in the lives of children and adolescents and "electronic friendship." By reviewing the relevant literature a number of questions will be addressed (e.g., Can children use machines as "electronic friends?" What effect does interactive technology have on friendship and social development? What are the implications of children being able to access the Internet?). (PsycINFO Database Record [c] 2000 APA, all rights reserved)

Orleans, Myron; Laney, Margaret C. (1998). **Early Adolescent Social Networks and Computer Use**. In: *Proceedings of the Families, Technology, and Education Conference* (Chicago, IL, October 30-November 1, 1997). A research project was conducted to examine the interactions between the social networks of young adolescents and their computer usage. Particular attention was focused upon whether computers tend to isolate youthful users. Adult anxiety regarding the damaging effects of computers on children was

assessed. Parental involvement, orientation to computers, and gender were the main variables studied. A case study approach was employed to gather observational data regarding the variety of interactional networks that framed the computer experience of a convenience sample of 32 subjects. The data were analyzed in terms of the reflexive co-construction of computer-oriented behaviors and their social interactions. The findings challenged the notion that heavy youthful computer users experience social isolation. Rather it was found that the interpersonal lives and computer activities of early adolescents reflexively amplified each other. Lower involvement of parents resulted in higher rates of peer socialization. Computer gaming was found to promote sociation under certain conditions. Online communication led to interpersonal communication in the presence of preexisting peer relations. It was also found that boys were more likely to socialize in relation to computers than were girls. The data were explained as consequences of context and gender-based differentiated styles of world-creating activity. Based on the findings, recommendations were made to parents encouraging a less fearful outlook on computers, and suggestions were offered on how teachers and parents could foster the integrative and developmental use of computers. (ERIC Database)

Sanders, CE; Field, TM; Diego, M; Kaplan M. (2000). **The relationship of Internet Use to Depression and Social Isolation Among Adolescents**. *Adolescence Summer*, 35(138): 237-42. The present study investigated whether higher levels of Internet use are associated with depression and social isolation among adolescents. Eighty-nine high school seniors were administered a questionnaire that measured low (less than 1 hour per day), moderate (1-2 hours per day), and high (more than 2 hours per day) Internet use; relationships with mother, father, and peers; and depression. Low Internet users, as compared with high users, reported better relationships with their mothers and friends. (ERIC Database) **[Research]**

### Cognitive Effects

Brown, Edward; Mann, Bruce. (2001). **Effects of Precomputer Website Framing on Student Recall and Knowledge Restructuring**. *International Journal of Educational Telecommunication*, 7(2), 129-163. Examined the effects of student-created paper-based website frames on their recall and knowledge restructuring. Statistical and observational comparisons were made of 25 students' (aged 16-18 yrs) knowledge and web page products in Frame and Nonframe groups. The Nonframe group outperformed the Frame group on the posttest immediately after class lectures. While both groups improved in their knowledge of content after the authoring activity, the experimental (Frame) group had a statistically superior improvement in test scores and out-performed the control group (the group without the precomputer framing activity) on the final recall test. Implications of the study are reported and future directions discussed. The results are intended to inform researchers and teachers about how to reverse a trend among students who prefer to approach website programming as a technocentric design activity that is largely dependent on the capabilities of the computer system. (PsycINFO Database Record [c] 2002 APA, all rights reserved) **[Research]**

Goldman, Susan R.; Zech, Linda K.; Biswas, Gautam; Noser, Tom; Bateman, Helen; Bransford, John; Crews, Thaddeus; Moore, Allison; Nathan, Mitchell; Owens, Stephen. (1999). **Computer Technology and Complex Problem Solving: Issues in the Study of Complex Cognitive Activity**. *Instructional Science*, 27(3-4), 235-68. Examines mathematics problem solving in a computer software environment using graphical representations of the results of simulations with adolescent students. Discusses the strengths and limitations of inferring goals and plans, the use of verbal protocols, and ways for computer-based learning environments to scaffold acquisition of domain knowledge. (PsycINFO Database Record [c] 2002 APA, all rights reserved)

Okagaki, Lynn; Frensch, Peter A. (1996). **Effects of Video Game Playing on Measures of Spatial Performance: Gender Effects In Late Adolescence.** In Greenfield, Patricia M. and Cocking, Rodney R. (Eds). *Interacting with video.* (pp. 115-140). *Advances in Applied Developmental Psychology*, Vol. 11. Stamford, CT: Ablex Publishing. (from the chapter) Examined 3 specific aspects of the relation between video game play and spatial skills among older adolescents [college undergraduates] / examined whether gender differences can be obtained in initial visual spatial performance and in video game play / examined the impact of video game play on spatial performance / studied the effect of video game play on the specific component of spatial skills utilized in the game / that is, if a video game relies heavily on 2 spatial skills, is the impact on those skills predictable / presented 2 experiments in which measures of spatial performance were obtained from Ss both before and after they practiced the video game Tetris. In Exp 1, paper-and-pencil measures of spatial performance were used, and in Exp 2, computerized measures of spatial performance were used. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

Oliver, Kevin Matthew. (1999). **Student Use of Computer Tools Designed to Scaffold Scientific Problem-Solving With Hypermedia Resources:** A case study. *Dissertation Abstracts International Section A: Humanities & Social Sciences*, 60(5-A), 1522. National science standards call for increasing student exposure to inquiry and real-world problem solving. Students can benefit from open-ended learning environments that stress the engagement of real problems and the development of thinking skills and processes. The Internet is an ideal resource for context-bound problems with its seemingly endless supply of resources. Problems may arise, however, since young students are cognitively ill-prepared to manage open-ended learning and may have difficulty processing hypermedia. Computer tools were used in a qualitative case study with 12 eighth graders to determine how such implements might support the process of solving open-ended problems. A preliminary study proposition suggested students would solve open-ended problems more appropriately if they used tools in a manner consistent with higher-order critical and creative thinking. Three research questions sought to identify: how students used tools, the nature of science learning in open-ended environments, and any personal or environmental barriers effecting problem solving. The findings were mixed. The participants did not typically use the tools and resources effectively. They successfully collected basic information, but infrequently organized, evaluated, generated, and justified their ideas. While the students understood how to use most tools procedurally, they lacked strategic understanding for why tool use was necessary. Students scored average to high on assessments of general content understanding, but developed artifacts suggesting their understanding of specific micro problems was naive and rife with misconceptions. Process understanding was also inconsistent, with some students describing basic problem solving processes, but most students unable to describe how tools could support open-ended inquiry. Barriers to effective problem solving were identified in the study. Personal barriers included naive epistemologies, while environmental barriers included a lack of communication activities and training. The study proposition was neither supported or rejected by the data, since students did not use tools effectively. Future studies may find tools support higher-order thinking if study recommendations are followed: training students procedurally and strategically, perhaps longitudinally; using students' personal problem models as an explicit part of instructional strategies; balancing students' epistemological comprehension of problem complexity with self-directed, self-management tactics; and employing the teacher as dialectic facilitator. (PsycINFO Database Record [c] 1999 APA, all rights reserved) **[Research]**

Oliver, Kevin; Hannafin, Michael J. (2000). **Student Management of Web-Based Hypermedia Resources During Open-Ended Problem Solving.** *Journal of Educational Research*, 94(2), 75-92. Twelve middle school students' (8th grade students) use of computer tools to manage and manipulate Internet-based hypermedia resources was investigated. Tools were proposed to support higher order thinking about hypermedia resources to help students find, frame, and resolve open-ended science problems. Tools alone were insufficient to help students manage hypermedia information for solving open-ended problems. Students more frequently applied lower order tool functions (e.g., information

collection) than higher order tool functions (e.g., reasoning). Students typically resolved problems with original solutions, but tools were used infrequently to develop evidence-based arguments justifying new ideas. Computer tools alone may be insufficient to help students manage extensive hypermedia resources. Together with additional support structures, however, tool potential may be realized. (PsycINFO Database Record [c] 2000 APA, all rights reserved) [**Research**]

Pianfetti, Evangeline Secaras. (1999). **Digital Video and Mathematics: Helping High School Students Understand and Interpret Abstract Concepts**. Dissertation Abstracts International Section A: Humanities & Social Sciences, 59(11-A), 4058. Much research has explored why students have difficulty interpreting visual representations of mathematical concepts such as graphs and why these misconceptions continue even in advanced math classes (D'Ambrosio, 1985; Kaput & Rochelle, 1996; Mokros & Tinker, 1987). Kaput & Rochelle (1996) suggest that this occurs because in the beginning mathematics classes teachers tend to present a reductive view of mathematical concepts. Consequently, students tend to perceive math as abstractly existing only in textbook problems and not in the everyday contexts. In an attempt to make these concepts more concrete, many classrooms employ various types of technology with the hope of providing students more time to analyze and interpret problems and less time manually calculating the answers. This one-year study was aimed at exploring the links between school-based math and its actualization in the outside world. Results from the study suggest that learning occurs in new and unforeseen ways with the introduction and integration of a technology. Key issues that follow from this study include: (1) the use of digital video may act as a medium that helps students visualize abstract concepts, (2) the use of multiple representations help show the interconnectedness of ideas, but students still seem to have difficulty interpreting the relationship among concepts, (3) the use of cross grade level evaluations suggest that the social hierarchy in the high school either legitimizes or devalues the feedback depending on who offers the criticism and whether or not the evaluation is conducted on a work in progress, (4) the collaboration that resulted within each group suggests that the roles students perceived themselves as having influenced their interaction with the technology, and, (5) the novelty of digital video on the Internet may transcend the learning of math because the students became consumed with the technical aspects of digital video and not the mathematics. (PsycINFO Database Record [c] 2000 APA, all rights reserved) [**Research**]

Subrahmanyam, Kaveri; Greenfield, Patricia M. (1996). **Effect of Video Game Practice on Spatial Skills in Girls and Boys**. In PM Greenfield and RR Cocking (Eds.). *Interacting with video*, pp. 95-114. *Advances in Applied Developmental Psychology*, Vol. 11. Stamford, CT: Ablex Publishing. (from the chapter) examined the relationship among gender, video game experience, and spatial skills / hypothesized that there would be gender differences favoring boys in both spatial skills and past video game experience / expected [also] to find that gender and past experience would contribute to spatial scores prior to the experimental practice / selected the age—10 yrs old—at which gender differences in spatial skills first become reliably evident / used a computerized spatial battery [because it used the same medium as the video games—the computer]. Video game practice, but not practice on a computerized word game, led to significant improvement in dynamic spatial skills, an improvement that was concentrated in those Ss who started out with relatively poor spatial performance / results showed strongly that, irrespective of gender, video game practice could serve as compensatory education for relatively weak spatial skills. (PsycINFO Database Record [c] 2000 APA, all rights reserved) [**Research**]

### **Miscellaneous Effects**

Gupta, Rina; Derevensky, Jeffrey L. (1996). **The Relationship Between Gambling and Video-Game Playing Behavior in Children and Adolescents**. *Journal of Gambling Studies*, 12(4), 375-394. 51 male and 53 female 9-14 yr olds completed a questionnaire exploring issues related to perceptions of video-game playing and gambling. A computerized blackjack game was individually administered. High

frequency video-game players (HVPs) were compared to low frequency video-game players (LVPs) with respect to their gambling performance on the blackjack gambling task and information from the questionnaire. Risk-taking strategies used by avid video-game players, and whether or not Ss perceived gambling and video-games as involving similar amounts of skill or realized that gambling is primarily a game of chance were examined. Results suggest that HVPs gamble more than LVPs, report that gambling makes them feel more important, and take greater risks on the blackjack gambling task although no overall differences in success were found. Males exhibited greater risk-taking tendencies on the blackjack task than females. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

## **Uses and Applications of Interactive Media**

### **Education and Careers**

Blanton, William E.; Greene, Melanie W.; Cole, Michael. (1999). **Computer Mediation for Learning and Play**. Journal of Adolescent and Adult Literacy, 43(3), 272-78. Describes and discusses "The Fifth Dimension," a distributed literacy consortium of after-school enrichment programs that involve cooperation between local community organizations affiliated with colleges and universities, in which children engage in activities using a variety of multimedia equipment and software. Notes the program is a useful intervention for solving many cognitive, social, and personal problems of young adolescents. (ERIC Database)

Combs, Kimberly Ann. (2000). **Factors Influencing the Implementation of Technology in a Magnet High School**. Dissertation Abstracts International Section A: Humanities & Social Sciences, 61(2-A), 492. The purpose of this time series multiple case study was to investigate factors affecting the implementation of technology in a Tech Prep magnet high school that focused their curriculum on engineering/technology or business/entrepreneurship. The following research questions were investigated: (1) What is the level of technology implementation? (2) What are attitudes regarding the implementation of technology in the classroom? (3) What are the factors that influence technology implementation? (4) How does technology implementation influence student achievement? The study's sample comprised 21 teachers and 146 of their students. The teacher participants represented varying levels of teaching experience and technology expertise. The participating students were freshmen and sophomores studying engineering/technology or business/entrepreneurship. Data collection and analysis involved both qualitative and quantitative methods. Qualitative methods included formal and informal observations, informal interviews, structured Internet surveys, and reviews of school and district documents. The researcher used a computer program, NUD-IST, 4.0, to organize and analyze the qualitative data. Quantitative instruments included the Stages of Concern Questionnaire, the Stallings Observation Instrument, and scores from the Texas Assessment of Academic Skills (TAAS), and the Preliminary Scholastic Aptitude Test (PSAT). A post hoc regression analysis of teacher use of technology explored the predictive value of selected teacher variables. Student academic achievement in high and low technology implementation classrooms was compared using ANCOVA to control for aptitude and prior achievement. Results from this study point to these conclusions: While teachers and students have positive attitudes toward the use of technology in the classroom, the lack of training and perception of low-tech support can be inhibitory. Further, neither of the variables examined in the regression analysis, Degree Earned nor Program Taught, were statistically significant in predicting the criterion variable, observed teacher use of technology. There was no statistically significant difference between student academic achievement in the high and low technology implementation academic classrooms. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**



Facemyer, Kevin C.; Peterson, Nils S. (1999). **Virtual Organizations, Virtual Mentoring, and At-Risk Youth: Implementation of a New Metacommunity**. With John Emerson, Claire Van Wingerden, and Tomikia Perkins. In: EDUCAUSE '99: Celebrating New Beginnings. [Proceedings] (Long Beach, CA, October 26-29, 1999); For full text: [www.educause.edu/conference/e99/proceedings.html](http://www.educause.edu/conference/e99/proceedings.html). Figures may not reproduce adequately. Forty high school students from different areas in the western United States collaborated on a year-long project designed to prepare youth for successful school-to-life transitions. The predominant mechanisms of interaction were e-mail, synchronous chats, and shared threaded writing posted in a virtual space via the Internet. This paper presents four perspectives on the curriculum and online interactions designed to prepare youth for successful school-to-life transitions. Discussed is the role of advanced technology in relation to success, outreach, partnerships, and communities. After a description of the project, discussion moves to the lessons learned, the policy issues raised, and the best ways technology should be used in the future. (ERIC Database)

Gilbert-Macmillan, Kathleen. (2000). **Computer-Based Distance Learning for Gifted Students: The EPGY Experience**. *Understanding-Our-Gifted*, 12(3), 17-20. This article discusses the Education Program for Gifted Youth (EPGY) at Stanford University, which delivers computer-based multimedia distance learning opportunities to accelerate gifted students in grades K-12 in the areas of mathematics, physics, computer programming, and expository writing. The program also offers computer-based distance learning for mathematics teachers. (ERIC Database)

Refvem, Joanna; Plante, Jean C.; Osborne, W. Larry. (2000). **Interactive Career Counseling in Middle and Secondary Schools: Integrating the Use of the Internet into School Career Development Programs**. In Bloom, John W.; Walz, Garry R. *Cybercounseling and cyberlearning: Strategies and resources for the millennium*. (pp. 115-127). Alexandria, VA, US: American Counseling Association. (from the chapter) Understanding and incorporating the use of the Internet in a school career development program is necessary for retrieving current information. Though traditional methods of finding information need not be abandoned, useful and user-friendly interactive computer programs exist that can guide students, parents, teachers, and counselors through the vast and complicated world of career information. Counselors must have an understanding of adolescent career development and an ability to facilitate access to the information and promote it, both with traditional sources and the Internet. This chapter discusses the current state of career planning, with a focus on adolescent career exploration and current resources in use, and then describes Career Explorer, an interactive program that uses the Internet, and its implementation in middle and high schools in North Carolina. An appendix lists helpful web sites for career information. (PsycINFO Database Record [c] 2000 APA, all rights reserved)

Sumner, Todd. (1998). **Design Considerations in Developing a Web-Based Mentor Network**. Project undertaken as part of the Joseph and Esther A. Klingenstein Fellows Program and as partial fulfillment of requirements for the Degree of Master of Arts in Educational Administration, Teachers College, Columbia University. This paper describes a Web-based mentor network designed to pair students in rural independent schools with undergraduates at selected liberal arts colleges. It is one of nine central program elements that constitute the Proteus(TM) system, a multimedia technologies architecture that supports distributed collaborations and work undertaken in the Small Schools Collaborative, a group of small independent schools. Following the introduction, a vignette illustrates how students would work and interact using the system. Part 1 identifies the similarities between learning communities created through computer-supported distance learning and in traditional educational settings; finds that the Proteus(TM) architecture supports the formation of dialogical communities associated with effective learning environments; and notes that the shared work spaces, archival and research capacities, e-mail, video conferencing, publishing, and portfolio management capabilities of the Proteus(TM) system provide strong infrastructure support to learning communities. Part 2 reviews research findings into the effectiveness of college students mentoring adolescents. Part 3 lays out a plan for how mentoring might be understood and undertaken sharing the core values of the Proteus(TM) system—that it be

constructivist and in keeping with the learning principles of Project Zero, the Harvard Graduate School of Education research center. (ERIC Database)

Walter, Virginia A. (1998). **Leading Boys from Bytes to Books**. Book Links, 7(6), 53-57. Journal availability: Book Links, 434 W. Downer, Aurora, IL 60506; <http://www.ala.org/BookLinks>. CD-ROMs and Web sites that have logical links to books on appealing topics can entice boys to read for fun and information. Research and professional experience tells us that boys are more enthusiastic technology users and less avid readers than girls are. The software and books listed are appropriate for children from kindergarten through high school. (ERIC Database)

Wang, Minjuan; Laffey, Jim; Wangemann, Paul; Harris, Carl; Tupper, Tom. (2000). **How Do Youth and Mentors Experience Project-Based Learning in the Internet-Based Shared Environment for Expeditions (iExpeditions)**. Paper presented at the Annual Meeting of the American Education Research Association (AERA) (New Orleans, LA, April 24-28, 2000). The Internet-Based Shared Environment for Expeditions (iExpeditions) is both a development effort of the Center for Technology Innovations in Education, University of Missouri, Columbia, and a research project conducted in partnership with Motorola, Inc. and a researcher at Brigham Young University (Utah). The project seeks to develop and understand the use of computer-supported collaborative learning (CSCL) technologies for supporting distributed learning communities via the World Wide Web. In the expedition examined, participants were challenged to come up with solutions on how to design, develop, and market wireless communication for cars, providing drivers with personalized information, messaging, entertainment, and location-specific travel and security services. Participants conducted their activities through a Web site providing a coordinated set of CSCL tools facilitating communication, information access, collaboration, and knowledge representation. Participants were 45 youth (children of Motorola employees) from 13 to 17 years old. Research questions addressed the learning experiences of participants, the teaching experiences of online mentors, and the function of the CSCL tools. Data were collected through online non-participant observation, electronic surveys, questionnaires, interviews, chat room observation, transcripts of forum entries, and project artifacts collection. Results show that substantial associations exist among youths' attributions, interest and participation, and team functioning. (ERIC Database) **[Research]**

### **Interactive Technology as a Learning Tool**

#### **Education**

##### **1. General Education**

Bain, Alan; Huss, Phillip; Kwong, Howard. (2000). **The Evaluation of a Hypertext Discussion Tool for Teaching English Literature to Secondary School Students**. Journal of Educational Computing Research, 23(2), 203-16. Describes a study that evaluated a network-based hypertext discussion tool (HDT) for teaching literature to adolescents by investigating whether the incorporation of the HDT into students' homework routine raised achievement over traditional discussion and text-based homework. Considers student feedback and attitudes toward learning with the HDT. (ERIC Database)**[Research]**

Chang, Chun-Yen. (2001). **A Problem-Solving Based Computer-Assisted Tutorial for the Earth Sciences**. Journal of Computer Assisted Learning, 17(3), 263-274. Investigated the effects of a problem-solving-based computer-assisted tutorial (PSCAT) on earth science achievement and attitudes of 10th grade students. 72 students (mean age 16 yrs) enrolled in a PSCAT intervention and 65 students (controls) enrolled in a Lecture-Internet-Discussion (teaching approach completed the Earth Science Achievement Test and the Attitudes Toward Earth Science Inventory. A multivariate analysis of covariance (MANCOVA) was performed on the post-test scores of both groups of Ss with Ss' pre-test scores as the

covariates. Results show that PSCAT was marginally more effective in promoting Ss' achievement in earth sciences, compared with controls. No statistically significant increase or decrease in attitudes toward earth science was observed. (PsycINFO Database Record [c] 2002 APA, all rights reserved) **[Research]**

Fishman, Barry; Kupperman, Jeff; Soloway, Elliot. (1999). **Linking Urban Latino Families to School Using the Web: A Pilot Study**. Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Quebec, Canada, April 19-23, 1999). This paper describes a project that provided television set-top Internet access devices to Latino families as part of a project to link the school and home in an inquiry-based science curriculum. The early phases of adoption of the Internet and the "NetTV" devices by families are described, with special attention to the different ways that families make educational use of the Internet. Internet use data was collected from 13 families of middle school students in Detroit (Michigan). Log files from the "boxes," student interviews, field notes, and parent comments from group meetings provided data that show the emerging patterns of use and preferences for online activity. Children (both students and their siblings) and, to a lesser extent, fathers, were the primary users. Mothers were concerned that their children were using the boxes properly for school, but appear not to have used the boxes much themselves. Education was not the primary application for the boxes, but students did access a wide range of educational resources, including the online science curriculum materials. (ERIC Database) **[Research]**

Geer, Gregory Charles. (2001). **Students Constructing Web Pages: Does It Affect Educational Outcomes?** Dissertation Abstracts International Section A: Humanities & Social Sciences, 61(7-A), 2534. This study examines the question of whether the action of students learning how to and then constructing web pages comprising a digital portfolio would positively affect their attendance, achievement, and attitude towards scholastic activities. Tenets of constructivist learning theory are fulfilled based on the authenticity of the activities inherent in constructing web pages. The study employed a quasi-experimental, pretest and posttest format. The intervention was conducted on a sample of 207 seventh and eighth graders at a junior high school in western New York State. The intervention included approximately 10 hours of lessons on the qualities of good web sites and the techniques for converting the student-selected artifacts of their learning into web pages. Data from the school's database were used to derive demographic data and statistics on two of the study's dependent variables, students' academic achievement, and attendance over several marking periods. In addition, a survey instrument (SSHA) measured the third dependent variable of the study, students' attitudes towards study and other scholastic activities, was administered before and at the end of the intervention to measure the effects of the intervention on the construct of scholastic attitudes. The multivariate statistical method of MANOVA was used to explore the effects of the independent variable of the intervention on the dependent variables of student achievement, attendance, and attitude towards study and other scholastic activities. Also, where sample sizes allowed, a series of possible moderating variables including gender, socioeconomic status, grade level, and the availability of a home computer connected to the Internet were examined through this multivariate statistical method. Information obtained through the data collection was analyzed and interpreted and where appropriate, tables and graphs were employed. A relationship between the study's intervention and the dependent variable of student achievement was statistically significant at the 95% level. Measured by the student's report card averages, the entire sample's average declined by 1.5 points while the intervention group's declined by .75 of a point. The intervention group's lesser decline on their report card average show a positive effect of intervention on student achievement. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

MacIver, Douglas J.; Balfanz, Robert; Plank, Stephen B. (1998). **The Talent Development Middle School. An Elective Replacement Approach to Providing Extra Help in Math—The CATAMA Program (Computer- and Team-Assisted Mathematics Acceleration)**. Report No. 21. Center for Research on the Education of Students Placed At Risk, Baltimore, MD. In Talent Development Middle Schools, students needing extra help in mathematics participate in the Computer- and Team-Assisted

Mathematics Acceleration (CATAMA) course. CATAMA is an innovative combination of computer-assisted instruction and structured cooperative learning that students receive in addition to their regular math course for about 10 weeks of the school year. This report presents two studies of CATAMA. The first compares growth in math achievement for 96 seventh graders, 48 of whom participated in CATAMA for 10 weeks, and 48 of whom were students of similar prior achievement who attended a comparison school where CATAMA is not offered. The second study reports data from interviews with CATAMA participants (30 fifth graders and 15 seventh graders) and observations of the program in action. Growth in mathematics procedures achievement was about one-half a standard deviation higher for CATAMA participants than for students in the comparison sample. High levels of student engagement and cooperation were observed among participants. Students like being in CATAMA and working with a partner and a computer to strengthen their procedural knowledge and skills. The discussion suggests that CATAMA has many advantages, compared to other approaches for providing extra help in math, on several dimensions, including cost, capacity, and flexibility. (ERIC Database) **[Research]**

Millians, David. (1999). **Simulations and Young People: Developmental Issues and Game Development.** *Simulation and Gaming*, 30(2), 199-226. Special issue: Play and Simulation/Gaming. Describes the age-related developmental issues that typically confront teachers and writers in developing and implementing educational simulation/games. Examines physical, personal and social, language, and cognitive factors. Discusses the steps taken in creating a 16-week simulation for 10- and 11-year olds. Provides a source list of games and reference materials. (ERIC Database)

Psychyl, Timothy A.; Clarke, Darlene; Abarbanel, Tracy. (1999). **Computer-Mediated Group Projects: Facilitating Collaborative Learning with the World Wide Web.** *Teaching of Psychology*, 26(2), 138-141. Examined the use of the World Wide Web (Web) to facilitate collaborative group work in 2 teaching environments: high school and graduate school. In the 1st case, 19 high school students (aged 13-17 yrs) participating in a university minicourse worked in small groups for 25 hrs conducting research and preparing a report on the Web. In the 2nd case, 8 psychology graduate students (aged 23-35 yrs) used personal Web sites for their seminar work. It was found that the Web environment facilitated group work by providing (1) clear demarcations of individual members' contributions, (2) a structure for group members' participation, (3) easy access to group members' contributions, (4) individual work space, and (5) commensurable resources for each group member. (PsycINFO Database Record [c] 2000 APA, all rights reserved)

Schnase, John L.; Cunnius, Edward L. (Eds). (1995). **Proceedings of CSCL '95: The First International Conference on Computer Support for Collaborative Learning.** Hillsdale, NJ, US: Lawrence Erlbaum Associates. This book consists of proceedings from the CSCL '95 Conference, examining computer support for collaborative learning. The papers represent research in a variety of classroom subjects (e.g., computer-mediated communication, literacy, science, mathematics), teaching methods, and social development factors (e.g., problem solving and collaborative processes) within elementary school through university and adult education settings. (PsycINFO Database Record [c] 2002 APA, all rights reserved)

## 2. Distance Learning

Cifuentes, Lauren; Murphy, Karen; Davis, Trina. (1998). **Cultural Connections: Promoting Self-Esteem, Achievement, and Multicultural Understanding through Distance Learning.** In: *Proceedings of Selected Research and Development Presentations at the National Convention of the Association for Educational Communications and Technology (AECT)*. Sponsored by the Research and Theory Division (St. Louis, MO, February 18-22, 1998). This case study focused on the effects of collaborative activities between two teachers and their students. The authors explored the effectiveness of distance learning for

adolescents in promoting self-esteem, achievement, and multicultural understanding. In Cultural Connections, diverse students across Texas collaborated on multicultural activities, which helped them grow in self-esteem, achievement, and multicultural understanding. Student participants were 14 randomly placed eighth-grade students and ten gifted and talented fifth-grade students. This project demonstrated that, in networked classrooms, students can connect with distant others to learn about their perspectives and increase their multicultural understandings. Four overarching themes emerged from the data: growth, empowerment, comfort with technology, and mentorship. In addition, distance technologies can foster team teaching across cultures and geographical distances. Technology used included interactive compressed video systems, HyperStudio software, Internet connections, CU-SeeMe software, and FirstClass computer conferencing software. (ERIC Database) **[Research]**

Kent, Jean. (1997). **Seattle High-Schoolers Get a Virtual Running Start: Public-Private Cooperation Allows Teens to Pursue College-Level Coursework**. ALKI, 13(3), 14-15. Journal availability: Washington Library Association, 4016 First Ave. N.E., Seattle, WA 98105-6502; <http://www.wla.org>. Describes the Virtual Running Start program that allows high school and other students to attend Seattle Community Colleges via the World Wide Web. Community-based learning, which allows students to use computers in public libraries or high school computer labs, is discussed, and implications for libraries are considered. (ERIC Database)

Smith, Sabra Ronee. (2000). **Internet Distance Learning and One-to-One Tutoring: A Reconceptualized Approach for Youth At-Risk of Dropping Out**. Dissertation Abstracts International Section A: Humanities & Social Sciences, 60(11-A), 3892. This action-oriented research study was designed to implement, observe, and document the effects of an alternative program, which coupled Internet-based Distance Learning and One-to-One tutoring, on increasing the academic achievement (through successful completion of high school courses) and self-esteem levels of bicultural students at-risk of failing or dropping out of high school. The three African American students in this study were enrolled in Cyberschool, a completely on-line high school, and the Institute of Scholar Training & Academic Tutorial (STAT), a nonprofit, education-based organization that provides comprehensive academic tutoring to students. A mixed methodology of both quantitative and qualitative inquiry was utilized in data collection and analysis. The data were presented as narrative case studies with each study organized according to the following format: (a) traditional school grade reports, (b) pre-enrollment interviews, (c) results of pre-enrollment IOWA Standardized Exam, (d) results of pre- and post-Individual Protective Factors Index (IPFI): A Measure of Adolescent Resiliency (Springer & Phillips, 1982), (e) reflective journals, (f) Cyberschool grade reports, and (g) follow-up interviews. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

### **Learning, Decision-Making, and Problem-Solving**

Britt, M. Anne; Gabrys, Gareth. (2001). **Teaching Advanced Literacy Skills for the World Wide Web**. In L. Wolfe, Christopher R. (Ed). Learning and teaching on the World Wide Web (pp. 73-90). A volume in the Educational Psychology Series. San Diego, CA, US: Academic Press, Inc. (from the chapter) In this chapter, the authors argue that despite hopes for the Internet to be an educational panacea, it will actually create new learning demands on students. The situation faced by students using the Web for research is similar to that faced by history students learning to use primary and secondary sources: they must construct integrated representations from multiple documents of varying quality. Dealing with this situation requires the ability to integrate information from different documents, identify and evaluate the credibility of these documents based on source information, and corroborate the information extracted from those documents with other credible documents. Considerable research shows that high school students, and many college students, do not have, or do not readily use, these skills when reading. The authors conclude that efforts must be made to explicitly train these skills to enable students to make sense

of the vast quantities of information available on the Internet. An application to provide tutorial and practice opportunities in sourcing, the Sourcer's Apprentice, is described. This application, though relatively simple, has proven quite effective at increasing students' attention to source information. (PsycINFO Database Record [c] 2001 APA, all rights reserved)

Chewning, Betty; Mosena, Pat; Wilson, Dale; Erdman, Harold; Potthoff, Sandra; Murphy, Anita; Kuhnen, Kathleen Kennedy. (1999). **Evaluation of a Computerized Contraceptive Decision Aid for Adolescent Patients**. Patient Education and Counseling, 38(3), 227-39. Discusses a computer-based contraceptive decision aid used with adolescent female family planning clinic patients (N=949). Results show improved short-term knowledge of and confidence in oral contraceptive (OC) efficacy. Higher OC knowledge after one year and fewer pregnancies were seen in one group. Findings suggest the usefulness of informatics tools as a supplement to patient-provider interactions. (ERIC Database) [Research]

Clariana, Roy B. (1997). **Considering Learning Style in Computer-Assisted Learning**. British Journal of Educational Technology, 28(1), 66-68. In a study involving three diverse computer assisted learning (CAL) experiences and different learner populations (13- and 14- year olds, 19-21- year olds, and adult education majors), a general shift in learning style (Kolb) was observed. The magnitude of the shift appeared to vary with learner ability and exposure to CAL. (ERIC Database) [Research]

Fidel, Raya; Davies, Rachel K.; Douglass, Mary H.; Holder, Jenny K.; Hopkins, Carla J.; Kushner, Elisabeth J.; Miyagishima, Bryan K.; Toney, Christina D. (1999). **A Visit to the Information Mall: Web Searching Behavior of High School Students**. Journal of the American Society for Information Science, 50(1), 24-37. Special Topic Issue: Youth Issues in Information Science. Analyzes Web-searching behavior for homework assignments of high school students through field observations in class and at the computer terminal with students thinking aloud, and through interviews with various participants. Results emphasize the need for training and for system design based on user seeking and search behavior. (ERIC Database)

Jones, Brett David. (2000). **Conducting Internet Inquiry Projects: Comparing the Motivation and Achievement of Two Groups of High-School Biology Students**. Dissertation Abstracts International Section A: Humanities & Social Sciences, 60(12-A), 4317. The purpose of this study was to determine how different types of Internet access and different amounts of online support affected high-school biology students' motivation and achievement during an Internet inquiry project. Four classes of ninth- and tenth-grade honors students (N = 100) participated in an Internet inquiry project in which they were presented with an ecology question that required them to make a decision based on information that they gathered, analyzed, and synthesized from the Internet and their textbook. Students then composed papers with a rationale for their decision. Students in one group had access to pre-selected relevant Web sites, unlimited access to the entire Internet, and were provided with less online support (less structured group). Students in the other group had access to only pre-selected relevant Web sites and were provided with more online support that included a description of what they should have been looking for once they got to a Web site and how much time they should have spent on each section of the project (more structured group). The hypotheses were that students in the less structured group would be more motivated due to their greater choice of Web sites, but would achieve less than the more structured group because, they would spend time searching the Internet. The study was also designed to provide recommendations to teachers interested in implementing effective Internet inquiry projects. Data sources included motivation questionnaires, ecology achievement tests, a computer experience questionnaire, an ecology project questionnaire, students' ecology papers, time sheets, field notes, and interviews with the teacher and the students. Surprisingly, students in the less structured group did not spend much time searching the Internet. This might explain why there were no significant differences in achievement between the two groups. Furthermore, students in both groups did not differ in their level of motivation. Two of the most important recommendations were: (1) to provide students with online support on the project Web page;

and (2) to allow students to search the Internet for information in addition to providing them with pre-selected links to relevant Web sites. (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

Valenza, Joyce Kasman. (2000). **Tag Team Tech: Beware of G(r)eeks Bearing Gifts: Thoughtfully Accepting the Gift of the Internet**. Voice of Youth Advocates, 23(4), 249. Discusses strategies to help students improve their research skills when using the Internet. Considers questioning techniques that can lead to deeper learning; identifying information problems; selecting appropriate keywords; search engines versus subject directories; Boolean operators; information literacy; library bookmarks; and using high quality sources. (ERIC Database)

White, Barbara Y.; Frederiksen, John R. (1998). **Inquiry, Modeling, and Metacognition: Making Science Accessible to All Students**. Cognition and Instruction, 16(1), 3-118. Evaluated the "ThinkerTools Inquiry Curriculum," a computer-enhanced, middle school science curriculum, to determine the impact of including the Reflective Assessment Process. Found that students' performance improved significantly on both physics and inquiry assessments. Controlled comparison revealed that students' learning was greatly facilitated by Reflective Assessment, particularly for low-achieving students. (ERIC Database) **[Research]**

### **Social Competence**

Clark, Lynn Schofield. (1998). **Dating on the Net: Teens and the Rise of "Pure" Relationships**. In Jones, Steven G. (Ed). Cybersociety 2.0: Revisiting computer-mediated communication and community. (pp. 159-183). New media cultures, Vol. 2. (from the chapter) Explores the emergent practice of teenage dating on the Internet using qualitative interviews, participant observation, and teen-led focus groups. The author considers these practices in the context of dating patterns throughout this century to develop an understanding of the possible cultural significance of the current practice. Three teens (aged 15-17 yrs) were selected from a broader qualitative study on the role of media technologies in the domestic context of the household. While the author states that her research primarily is based on these interviews and observations in "real life," she supplemented the knowledge gained through these methods by "lurking" in teen chat rooms, and reading e-mail exchanges between one of the subjects and on-line friends. The author concludes that whereas teen dating relationships in chat rooms mirror the relationships of "real life" in their adherence to norms of heterosexism and sexism, there is also a difference in the role of trust and intimacy in these relationships compared with those of the past and in "real life." (PsycINFO Database Record [c] 2000 APA, all rights reserved) **[Research]**

Gray, James H. (1999). **Understanding Online Peers: Sociocultural and Media Processes among Young Adolescent Students in the United States**. Dissertation Abstracts International Section A: Humanities & Social Sciences, 60(1-A), 0104. In this thesis I investigate how American young adolescent students construct understandings of online peers, what understandings they construct, and how contexts shape their understandings. I approach these questions through an online, collaborative social studies project conducted by students in two sixth-grade classrooms from geographically distant and culturally dissimilar communities. During a twenty-week curriculum, students met online peers and worked in small cross-site groups to investigate and report on issues in their respective communities (e.g. transportation, school life, environment). They used three Internet-based communications media: Web home pages, Usenet conferences, and an educationally-oriented MUD-a text-based virtual reality system. Observational data, three sets of student interviews, and online documents provide the basis for ethnographic descriptions and analyses. I use a sociocultural framework to describe and analyze how each online medium affords particular interactions and understandings. Throughout, peers judged one another in terms of their local group norms and cultural models. Home page photos evoked examination and

evaluation of online peers in terms of physical appearance. Autobiographical home page text allowed students to locate like-minded peers and negotiate later interactions with them. Style and content of early conference messages established a longer-term relational tone-friendly, cool, hostile-among members of cross-site work groups. The MUD stimulated a wide range of non-academic interactions from polite conversation to spontaneous teaching to virtual violence; with adult facilitation, collaborative decision-making also occurred. Understandings often grew out of students' shared personal interests, such as sports participation or musical preferences. Drawing on this content knowledge, students used processes of inference, stereotyping, and comparisons to make sense of online peers, primarily in relation to their own local social contexts. They assessed peers' academic competence as project partners, and their relational status as potential friends, foes, romantic interests, or mere acquaintances. Future design and research of online interaction and learning environments would profit from sociocultural analyses that go beyond an exclusive focus on properties of media and online activity. Educators aiming to foster interpersonal and intercultural understanding should attend to the salience for adolescents of their own local social identity, peer groupings, and cultural models. (PsycINFO Database Record [c] 1999 APA, all rights reserved) **[Research]**

Schliesman, Terry; Ayres, Joe. (1999). **The Relationship between Computer Time and Communication Apprehension/Communication Competence among Adolescents**. Paper presented at the Annual Meeting of the National Communication Association (85th, Chicago, IL, November 4-7, 1999). This study was conducted to determine if time spent using the computer was related to communication apprehension (CA) and self-perceived communication competence (SPCC) among high school students. To this end, an ex post facto design was employed. Subjects were 534 students from a West-Coast school district. Results indicated that students' self-reported computer time use did not correlate significantly and/or substantially with levels of communication apprehension or communication competence. Among other things, these findings suggest that use of computers is not as socially threatening as some scholars believe. (ERIC Database) **[Research]**

### **Communication**

Kaczynski, Dan; Platt, John S. (1999). **Using Technology to Link Incarcerated Youth with the Community**. *Reaching Today's Youth: The Community Circle of Caring Journal*, 3(3), 59-62. Special Topic: "Juvenile Justice or Injustice: Promising Preventions and Interventions." Advocates using technology to provide assistance for youth during and after incarceration, emphasizing that community involvement in the transition process can be significantly enhanced with technology support links. Recommends visual visits with family members, counselors, and teachers back home as an important addition to treatment or continued education. (ERIC Database)

Kehus, Marcella J. (2000). **Opportunities for Teenagers to Share Their Writing Online**. *Journal of Adolescent and Adult Literacy*, 44(2), 130-37. Shares the author's experiences helping teenage students write for audiences beyond the teacher, the classroom, the school and the geographical community. Discusses issues of policies, procedures, and possibilities of online communities. Describes TEENLIT.COM, a website that fosters teens' writing and provides a community for adolescent writers. Discusses lessons learned about publishing on the web and working with adolescents online. (ERIC Database)

Wright, Mareena McKinley; Schaffer, Rebecca; Coolbaugh, Kathleen; Bowen, Gary; Wiley, Gina. (1998). **"Military Teens on the Move": An Internet Resource for Military Youth Facing Relocation**. In: *Proceedings of the Families, Technology, and Education Conference* (Chicago, IL, October 30-November 1, 1997). With the "Military Teens On The Move" (MTOM) Web site, the Office of Family Policy has implemented an innovative approach to providing relocation support for military families and



children via the Internet. This paper briefly describes the design team's efforts to design, develop, and implement MTOM. The first section of the paper describes the process and results of an assessment of military youth needs and available resources. The second section describes MTOM's design, including its goals and objectives, structure, and content. The third section describes the current pilot test of the Web site, and the fourth section identifies "next steps" in implementing the Web site across the Department of Defense. The paper notes that by connecting military youth to a wide range of information resources already existing on the World Wide Web and to new resources tailored to meet the unique needs of military teens facing relocation, MTOM intends to help teens play a more proactive role in the relocation process, reconnect quickly to their new communities and positive peer groups, and develop and maintain a positive relationship with their parents and families. (ERIC Database)

### **Health Promotion**

Lieberman, Debra A. (1997). **Interactive Video Games for Health Promotion: Effects on Knowledge, Self-Efficacy, Social Support, and Health.** In Street, Richard L., Jr., Gold, William R. et al. (Eds). *Health promotion and interactive technology: Theoretical applications and future directions.* (pp. 103-120). LEA's communication series. Mahwah, NJ, US: Lawrence Erlbaum Associates, Inc. Considers how multimedia instructional design principles integrated into video games can contribute to health promotion targeted to children and adolescents. The authors point to relevant theory and research evidence in this area, and then consider how to design health promotion learning activities when games are accessible on networks online. The discussion of design principles is based on research findings involving 4 titles from the Health Hero video game series, one with an anti-smoking message, 2 about diabetes self-management, and 1 about asthma self-management. Research on Health Hero video games demonstrates that video games can improve several intervening factors that lead to better health outcomes for young people: attention to and active processing of health promotion messages, motivation to learn about health, knowledge about prevention and self-management, perceived self-efficacy for healthy behaviors, and communication about health with others who can provide social support. (PsycINFO Database Record [c] 2000 APA, all rights reserved)

### **Use of Interactive Media as a Research Tool/Methodology**

Comstock, Michelle; Addison, Joanne. (1997). **Virtual Complexities: Exploring Literacy at the Intersections of Computer-Mediated Social Formations.** *Computers and Composition*, 14(2), 245-56. Special Issue: Computers and Diversity. Suggests that, as more students gain access to the Internet and learn to write in electronic environments, literacy researchers in computers and composition need to study the discursive practices of these students outside the classroom in relation to the classroom. Explores the emergence of a lesbian, bisexual, and gay youth cyberculture as an example of such discursive practices. (ERIC Database)

Dresang, Eliza T. (1999). **More Research Needed: Informal Information-Seeking Behavior of Youth on the Internet.** *Journal of the American Society for Information Science*, 50(12), 1123-24. Special topic issue: the 50th Anniversary of the Journal of the American Society for Information Science. Part 2: Paradigms, Models, and Methods of Information Science. Proposes the adoption of a new research paradigm that takes advantage of the digital world and may provide greater insight into how young people seek information. This involves a closer collaboration with youth as partners in constructing research and probing the different criteria of youth for determining the success of a search. (ERIC Database)

Supple, Andrew J.; Aquilino, William S.; Wright, Debra L. (1999). **Collecting Sensitive Self-Report Data with Laptop Computers: Impact on the Response Tendencies of Adolescents in a Home Interview.** *Journal of Research on Adolescence*, 9(4), 467-88. Explored effects of computerized, self-

administered data collection techniques in research on adolescents' self-reported substance use and psychological well-being. Adolescents completing sensitive questions on only laptop computers reported higher levels of substance use and indicated higher levels of depression and irritability; they perceived more response anonymity and had more favorable attitudes toward computerized data collection than those completing paper-and-pencil forms. (ERIC Database) [Research]

### **Working with Adolescents with Special Needs**

Ferrell, Kay Alicyn; Wright, Charles; Persichitte, Kay A.; Lowell, Nathan. (2000). **Capitalizing Distance Technologies to Benefit Rural Children and Youth with Visual Disabilities.** In: Capitalizing on Leadership in Rural Special Education: Making a Difference for Children and Families. Conference Proceedings (Alexandria, VA, March 16-18, 2000). The University of Northern Colorado developed a master's degree program to train specialists in the education of students with visual disabilities in the 14-state region of the Western Interstate Commission on Higher Education. The program is student-centered, stresses effective interaction between faculty and students and among students, and uses academic resources that address the multiple learning styles of students. Although multiple media and distance systems are used to deliver this program, the World Wide Web was chosen as a central learner and instructional resource for the conversion of each course for distance delivery. All courses have embedded syllabi, links to discipline and course standards, course requirements, descriptions of course activities, an asynchronous threaded discussion area, a course schedule, a dedicated class listserv, and a place for additional Web-based and other resources. Student support systems include an online admissions application, a student handbook, a Toll-Free phone number into the special education division office, a Webmaster who responds to technical problems, a CD-ROM with Web browser to load on home computers, and course and enrollment listservs. The project found that the design of distance education courses was expensive and needed much time and expertise; significant specialized design was required since most distance delivery technologies are visual; and extensive advance planning and faculty training were required. (ERIC Database)

Huguenin, Nancy H. (1997). **Employing Computer Technology to Assess Visual Attention in Young Children and Adolescents with Severe Mental Retardation.** Journal of Experimental Child Psychology, 65(2), 141-70. Sought to establish a valid computer measurement technique for educational assessment applications. Similarities and differences in performance on visual discrimination tasks for young children of normal development and adolescents with severe mental retardation were analyzed using multiple testing procedures. Found differences in the two groups in the efficiency of their shifting attention between elements of complex stimuli. (ERIC Database)

Huguenin, Nancy H. (2000). **Reducing Overselective Attention to Compound Visual Cues with Extended Training in Adolescents with Severe Mental Retardation.** Research in Developmental Disabilities, 21(2), 93-113. A study investigated whether computer touch-screen technology could improve the attentional skills of three adolescents with severe mental retardation. Initially, prior reinforcement contingencies of individual stimuli failed to control their attention. Extended exposure to single stimulus training and conflict compounds, however, alleviated stimulus overselectivity and improved attentional skills. (ERIC Database)

Johnson, KB; Ravert, RD; Everton, A. (2001). **Hopkins Teen Central: Assessment of an Internet-Based Support System for Children With Cystic Fibrosis.** Pediatrics, 107(2): E24. Support groups can be an important therapeutic intervention for individuals with chronic debilitating illness. However, it can be difficult for patients to convene in one place. This study examined the use of a highly interactive electronic support group for 18 teenagers with cystic fibrosis. Participants logged onto the site an average of 4 times per month, with most of the activity taking place in the sections of the site that allowed them to

socialize. Three-quarters (77%) e-mailed peers at least every other week. The authors conclude that teenagers with a chronic disease will actively participate in an electronic support group, and that the social and expressive aspects of this participation holds much promise. (Editor) **[Research]**

Morgan, Robert L.; Gerity, Brent P.; Ellerd, David A. (2000). **Using Video and CD-ROM Technology in a Job Preference Inventory for Youth with Severe Disabilities**. Journal of Special Education Technology, 15(3), 25-33. This article describes a motion video CD-ROM program designed to assist youth with severe disabilities in the selection of job preferences. Traditional vocational interest inventories for individuals with disabilities and video and CD-ROM career exploration programs for typical youth are presented, then the specialized CD-ROM program is described. (ERIC Database)

Murdock, Peggy O'Hara; McClure, Christopher; Lage, Onelia G.; Sarkar, Dilip; Shaw, Kimberly. (1999). **MAPP: A Multimedia Instructional Program for Youths with Chronic Illness**. For full text: [www.mtsu.edu/~itconf/proceed99/murdock.html](http://www.mtsu.edu/~itconf/proceed99/murdock.html). In: Proceedings of the Mid-South Instructional Technology Conference (Murfreesboro, TN, March 28-30, 1999). The Multimedia Approach to Pregnancy Prevention (MAPP) is an expert intelligence multimedia program administered in outpatient and inpatient clinics in the University of Miami/Jackson Children's Hospital (Florida). The target population for the MAPP program is youths aged 9-14 years, diagnosed with chronic illnesses (asthma, diabetes, and sickle cell disease). Program sessions take place in a clinic setting, using a portable computer. Three sessions have been developed on chronic illness and its effects on sexual development. The major aim of MAPP is to strengthen intentions to postpone sexual initiation and prevent pregnancy. Evaluation takes place by examining differences between a treatment and control group on pre-post tests at baseline, 1, 3, and 6 months. Measurement instruments include a pre-post questionnaire, computer log, module development logs, and clinic checklist. Outcome evaluation includes comparison of knowledge and attitude change toward sexual abstinence and changes in behavioral intention to choose abstinence in both the intervention and control group. Preliminary reports indicate acceptance of the program by subjects, parents, and clinic personnel. (ERIC Database) **[Research]**

Natal, Dottie. (1997). **The Use of Cooperative Group Management Software for Hands-On Science Activities to Improve Communication between Students with Disabilities and Their Peers**. Imagen Multimedia Corp., Lompoc, CA. This report describes the development of an educational software program to assist youth with disabilities in participating in discourse in regular school settings. The software was designed to manage cooperative groups as students engaged in hands-on science activities and was specifically developed for teaching the subject of batteries and bulbs. Ten classrooms in which special education students were enrolled with regular education students were observed, and the types and quantities of verbal interactions between disabled students and peers were reported. Eight groups of four or five students (each group containing one special education student) were then pulled from these classrooms and the software was tested with these students. Evaluation indicated that the cooperative learning activities and the software provided the structure needed to include students with disabilities and increased communication between disabled students and their peers. Evaluation also indicated non-disabled peers were able to help keep students with disabilities on task and that there was a high level of engagement in the learning activities. Appendices include the texts for sample lessons at different reading levels, a technical specifications document, parent permission forms, sample student workbook pages, and sample teacher manual pages. (ERIC Database)

Passig, David; Eden, Sigal. (2000). **Improving Flexible Thinking in Deaf and Hard of Hearing Children with Virtual Reality Technology**. American Annals of the Deaf, 145(3), 286-91. A study investigated whether rotating three-dimensional objects using virtual reality would affect flexible thinking in 14 children (ages 8-11) with hearing impairments. Children played virtual 3-D Tetris individually, 15 minutes once weekly over 3 months. Before-and-after testing showed significantly improved flexible thinking in the experimental group. (ERIC Database) **[Research]**

Robinson, Deann A; Attix, Gerald V. (1998). **Amazing "Speaking Dynamically" Tools Utilized in High School Special Education Classroom.** Web site: [www.dinf.org/csun\\_98/csun98\\_150.htm](http://www.dinf.org/csun_98/csun98_150.htm). Paper presented at the California State University - Northridge Conference (Los Angeles, CA, March 1998). This paper describes how Alameda High School in California is using the Speaking Dynamically Pro v2.0 software by Mayer-Johnson to help 13 special education students (ages 14-18) communicate and make the world more accessible. The students have a range of disabilities and skill levels. This computer program enables the students to make choices, convey needs, and have experiences with people in the community that they were unable to communicate with before. The school has developed over 300 communication boards on the Speaking Dynamically Pro v2.0 program for these students. The boards are divided into six main areas: restaurants and food, community businesses, a math game, computer software and game choices, journal writing, and free-time activity choices. The development of the boards was based on the classroom's schedule and curriculum. Boards were created which involved school and community experiences. Also included are conversations or interactions that students would commonly have while in places of business such as the bank, post office, or library. The boards can be used to role-play conversations and interactions, and increase vocabulary and word recognition, as well as familiarize the students with the functions of community businesses. (ERIC Database)

Spinelli, Cathleen G. (1998). **Facilitating and Promoting Academic and Social Success for the Adolescent with Attention Deficit Disorder.** ERIC NO: ED417545. This paper discusses the role of resource center teachers in helping students with attention deficit disorder (ADD) successfully make the transition to secondary school. It addresses: (1) characteristics of ADD, including academic underachievement, cognitive fatigue, fine motor dysfunction, lack of self-monitoring skills, poorly developed organization and time management skills, and performance inconsistency; (2) the influence of adolescence and secondary school demands on students with ADD; (3) diagnosis and placement; and (4) remedial strategies for resource center teachers, including monitoring progress, providing prompts and encouragement, promoting use of computers and modification of assignments to address fine motor dysfunction, encouraging self-awareness and self-management, supporting the use of structured organizers, fostering the use of daily notebooks to assist in short and long-term planning, prompting students to use compensatory skills, persuading students to request assistance and clarification, teaching mnemonic devices, advocating the use of study skills techniques, maintaining close supervision and providing direct instruction, coaching self-advocacy skill development, and recommending and facilitating involvement in extra-curricular activities. (ERIC Database)

Wiig, EH.; Jones, SS; Wiig, ED. (1996). **Computer-Based Assessment of Word Knowledge in Teens with Learning Disabilities.** Language, Speech, and Hearing Services in Schools, 27(1), p21-28. Computer-based and standardized administration of the Test of Word Knowledge were compared for 30 adolescent subjects with learning disabilities. The total, receptive, and expressive composites were higher for the standard administration. Results indicated the need for independent norms for computer-based adaptations of standardized language tests. (ERIC Database) **[Research]**

### **Creating and Evaluating Web Sites**

Doran, Matt; Smith, Allyson; Hoppel, Andrea; Morse, Laura; Edwards, Mike; Hamilton, Jared; Simonin, Danielle; Maloney, Colleen; Underwood, Michelle; O'Donnell, Shannon; Wright, Cara; Chambliss, Catherine. (1998). **Informing Students about the Variable Quality of Psychological Internet Resources: Sites Targeting Substance Abuse Problems, Emotional Disorders, and the Needs of Parents.** ERIC NO: ED420822. The development of the Internet has provided an entirely new means of obtaining psychological healthcare. Web sites have been set up for the purpose of providing information about psychological problems and administering help. Unfortunately, the quality of these sites is not

regulated and therefore varies widely. An author-devised rating scale was used to assess six dimensions of site quality, including accuracy, practicality, normalization, sense of belonging, referral, and feedback mechanisms. The present investigation provides descriptive information about the nature of the sources evaluated. It also permits a comparison of the relative quality of the available sites across three different content domains: the needs of parents, substance abuse problems, and emotional disorders. A total of 210 web sites which included three different psychological problem categories (autism, bipolar disorder, and depression) were studied. Availability of quality resources and prevalence of the problems being targeted was not positively associated. This study helps to specify areas of unmet need and may assist in the development of additional resources on the Internet. The rating scale is appended. (ERIC Database)

Huyhn, Kim; Kosmyna, Bonnie; Lea, Holly; Munch, Krista R.; Reynolds, Heather S.; Specht, Corey; Tinker, Elizabeth C.; Yee, Anne Jezzamine; French, Laura R. (2000). **Creating an Adolescent Health Promotion Internet Site. A Community Partnership between University Nursing Students and an Inner-City High School.** Nursing and Health Care Perspectives, 21(3), 122-26. Nursing students collaborated with urban high school students to identify adolescent health needs and to build and maintain a health information Web site. Student empowerment and ownership of the project were the keys to its sustainability. (ERIC Database)

Jones, Patrick. (1997). **A Cyber-Room of Their Own: How Libraries Use Web Pages to Attract Young Adults.** School Library Journal, 43(11), 34-37. Examines Web sites on the Internet that were created especially for teenagers by various public libraries. Highlights include young adult areas and services in actual library buildings; a list of outstanding teen Web sites; and a list of factors to consider when creating a young adult Web page. (ERIC Database)

Ryan, Sara. (2000). **It's Hip to Be Square.** School Library Journal, 46(3), 138-41. Discusses creating and managing an effective library Web site aimed at teenagers. Topics include omitting links to sites teens already know about; links to book review sites where teens can post their own comments; links to local sites; regular updating; use of graphics; and involving teens in the process. (ERIC Database)

Warnick, Barbara. (1999). **Masculinizing the Feminine: Inviting Women On Line Ca. 1997.** Critical Studies in Mass Communication, 16(1), 1-19. Examines how persuasive appeals to women to go online have marginalized and excluded some women. Describes how these appeals contrast with the discourse of Web sites for young women, teens, and girls that provide noncommercial forums for social support, humor, self expression, and advice. Asserts that these forums "degender" the computer by engendering new uses for computer-mediated communication. (ERIC Database)

## **FEDERALLY-FUNDED RESEARCH CURRENTLY UNDERWAY OR RECENTLY COMPLETED**

Following is a list of federal currently funded or recently completed research focused on interactive media and adolescents. This information was derived from the Computer Retrieval of Information on Scientific Projects (CRISP) system and the National Science Foundation Award Abstracts Database. The search was limited to projects funded within the last five years, or scheduled to be completed in 1999 or later.

### **Intervention Research Using Interactive Media**

#### **Substance Abuse**

**Project Title:** ARRESTING SMOKING UPTAKE USING INTERACTIVE MULTIMEDIA

**PI Name:** BULLER, DAVID B.

**Institution:** AMC CANCER RESEARCH CENTER, DENVER, CO

**Project Start:** 30-SEP-1997

**Project End:** 31-JUL-2001

**Funding Agency/Institute:** NATIONAL CANCER INSTITUTE

**Abstract:** Smoking prevalence among adolescents is once again on the rise. Adolescents are often motivated and try to quit, but very few existing adolescent cessation programs showed long-term effectiveness. A new advance in cessation counseling uses computer systems to tailor messages to gender, ethnicity, and stage of change toward cessation. However, these systems are not configured for majority of adolescent smokers who are in the process of uptake and smoke intermittently, because they assume regular smoking and nicotine dependence. The systems also do not take full advantage of the latest advances in computer and media technologies that can be distributed widely over the global information network and that can be configured by the smoker to self-tailor counseling. In this four-phase project, a computerized tailoring cessation counseling system will be designed for smokers aged 12-15 that matches messages to stage of uptake using the next generation of computer technology, interactive multimedia. Phase I will be devoted to formative research (adolescent survey, adolescent and teacher focus groups, computer use study, school policy surveys) to developing tailoring protocols for experimenters and regular smokers (and possibly ex-smokers). Multimedia production will occur in Phase I and modules and implementation procedures will be "beta" tested (pilot-tested) in Phase II. Phase III will contain a randomized trial on the effectiveness of the multimedia program, using a pretest- posttest control group design with students enrolled in grades 6-9 in 30 pair-matched public schools in Tucson and Albuquerque. The multimedia cessation program will be disseminated in Phase IV over the World Wide Web. A feasibility study will be conducted that monitors access and use of it by community organizations and schools serving adolescents, especially those at high risk (e.g., low academic attainment, truancy).

**Project Title:** COMPUTERIZED NICOTINE CESSATION FOR ADOLESCENTS

**PI Name:** CHIAUZZI, EMIL J.

**Institution:** INFLEXXION, INC., NEWTON, MA

**Project Start:** 05-SEP-1997

**Project End:** 31-JAN-2001

**Funding Agency/Institute:** NATIONAL CANCER INSTITUTE

**Abstract:** This application proposes the development and field testing of an interactive computer program called "Rebels: The Battle for a Smoke-free Future." The program is intended to be offered through high school to assist adolescents in tobacco cessation. Rebels utilizes multimedia technology for teaching cessation-related coping skills. In the program, adolescents will be exposed to the short- and long-term risks of tobacco use, the ingredients in tobacco products, and media influences in tobacco use

in an engaging, dramatic manner. Users of the program will receive tailored motivational feedback based on their tobacco use patterns and motivations, which will then be linked to individualized skill-building interventions. Users will receive printouts tailored to their needs and interests. The program will integrate culturally diverse role model stories to impart tobacco information and cessation strategies. In Phase I, interviews, focus groups, and acceptance tests produced a program structure and prototype. In Phase II: (1) Rebels will be completed; (2) a validation of computerized tailoring questions will be compared to standard written questionnaires; and (3) the program will be field tested against a control intervention (standard tobacco education videotapes). If Rebels demonstrably enhances reduction or cessation of tobacco use, an extensive national market would be assured.

**Project Title: COMPUTERIZED TOBACCO RISK ASSESSMENT FOR ADOLESCENTS**

**PI Name:** LORD, SARAH E.

**Institution:** INFLEXXION, INC., NEWTON, MA 02464

**Project Start:** 11-MAY-1999

**Project End:** 31-MAR-2003

**Funding Agency/Institute:** NATIONAL CANCER INSTITUTE

**Abstract:** We propose development of an interactive multimedia program, Special Report. The program is designed to be offered as a tobacco risk assessment and educational tool for middle and junior high school students to increase knowledge about the effects of tobacco and personal risks for tobacco use, intention not to use tobacco, and self efficacy for avoiding tobacco use. Designed to be offered in a single 50 minute session, Special Report will consist of: 1) a basic tobacco knowledge test and interactive risk assessment; 2) media literacy awareness exercises; 3) education about the short- and long-term physiological and psychological effects of tobacco use, including the progression to addiction; and 4) skill building activities to prevent the use of tobacco. Phase I addressed development of a structure and prototype for this program using the input of early adolescents, parents, physicians and other experts in the area of tobacco education and prevention. All specific aims were accomplished, producing a technical design, working demo CD-ROM, and an outline of a supplemental facilitator manual, Phase II will involve production of a fully operational Special Report CD-ROM, usability testing, a field test of the effectiveness of the program, and satisfaction testing. Based on our own knowledge and extensive discussions with educators and researchers, Special Report will be pioneering in its use of state-of-the-art technology for enhancing tobacco education. If such a program demonstrated effectiveness in reducing risk behaviors and intent to use tobacco over traditional education approaches, school administrators and health educators would likely view it as a desirable and cost-effective way to offer education and prevention information to middle and junior high school students. **PROPOSED COMMERCIAL APPLICATION:** The commercial impact of this project is very promising. There are currently 12 million students in the target age range (middle and junior high school) for Special Report [NCES, 1999]. Simultaneously, the issue of tobacco prevention in this age group has become a focus of intense national concern, since youth are most vulnerable to initiating tobacco use during these early adolescent years. With funds from the recent tobacco settlement, more states are attempting to implement programs in this area. Yet, few empirically-based, effective programs geared toward early adolescents are available. If we were able to obtain only a small fraction of the middle and junior high schools in this country as customers, the revenues would be substantial.

**Project Title: EFFICACY STUDY OF AN INTERNET TOBACCO NONUSE PROGRAM**

**PI Name:** COPELAND, LIESEL H.

**Institution:** CLEVELAND CLINIC FOUNDATION

**Project Start:** 01-MAR-2001

**Project End:** 28-FEB-2003

**Funding Agency/Institute:** NATIONAL CANCER INSTITUTE

**Abstract:** (Applicant's Description) Tobacco use is the single most preventable cause of death in the United States, with four out of five persons beginning tobacco use as children or adolescents. The

literature suggests that programs for school-age children have an impact by reducing tobacco use and decreasing initiation of tobacco use. Further research is required to determine how to improve this reduction as well as how to increase dissemination of proven interventions that will have a significant impact on tobacco use. This application examines how Internet technology can be used to improve dissemination of a tobacco-use prevention curriculum for elementary students. The first study year involves development and analysis of an Internet delivered computer-based program for fifth grade students. This includes examining presentation and educational strategies for the Internet as well as identifying environmental barriers that may impede use of the Internet technology. The second study year is an evaluation of the expected educational outcomes (e.g., increased knowledge and non-use intentions, confidence in refusal/decision making skills) from the Internet-based curriculum. Additionally, analysis will be done on how effective the Internet program is in delivering different health information messages. Study designs include a descriptive, qualitative study in the first year and a pre-post comparison group experimental research design in the second year. The development study for the Internet-based program will occur in one suburban and one urban school of similar size. In study year two, the Internet-based and health educator-based schools will continue to receive the intervention and an additional matched suburban school will continue to serve as a comparison. Data collection includes observations, focus groups, questions in the computer program, and a questionnaire designed for the study that has content validity and produces consistency in response.

**Project Title: INTERNET-HOME BASED TREATMENT FOR ADOLESCENT SMOKERS**

**PI Name: PATTEN, CHRISTI A.**

**Institution: MAYO CLINIC ROCHESTER**

**Project Start: 30-SEP-1998**

**Project End: 31-JUL-2002**

**Funding Agency/Institute: NATIONAL CANCER INSTITUTE**

**Abstract:** (Applicant's Description) Adolescent smokers are at high risk for future tobacco-related morbidity and mortality. Results of our trials in adolescent smokers using nicotine patch therapy indicate that pharmacologic intervention is not sufficient. Behavioral treatments tailored to adolescents offer the possibility of more effective intervention. An interactive, in home, computer-based system, CHESS (Comprehensive Health Enhancement Support System) has demonstrated positive health outcomes in a number of adult populations. In this proposal, an Internet-based CHESS module will be developed and evaluated for in home use for adolescent smoking cessation. We chose to study the efficacy of CHESS for adolescent smokers because it offers a number of advantages over traditional smoking cessation programs, including peer-based social support and other content which will be based on the needs identified by adolescents. It also has the potential for widespread dissemination through the Internet. The primary study aims are: 1) to assess the needs of adolescent cigarette smokers through a comprehensive needs assessment of adolescent current and former smokers ages 11 to 17; 2) to develop the content, design and subsequently construct a CHESS module for smoking cessation based on the needs identified by adolescents; and 3) to evaluate in a randomized trial the efficacy of providing in home computers with the CHESS module compared to brief office intervention on the week 24 smoking abstinence rates in 252 adolescent cigarette smokers ages 11 to 17. The primary hypothesis to be tested is that CHESS will increase the 6 month smoking abstinence rates in adolescent cigarette smokers compared to brief office-based intervention. The project will have three phases. The first phase will consist of a needs assessment using focus groups and surveys of 612 adolescent current and former smokers ages 11 to 17. The second phase will be to develop and construct an Internet-based CHESS module for adolescent smoking cessation. In the third phase, 252 adolescent smokers ages 11 to 17 years will be provided with brief office intervention for 4 weeks (n=126) or CHESS for 24 weeks (n=126) in a randomized, two-group design. The assessments will occur at weeks 0, 4, 8, 12, 16, 20, 24, 36, and 52. The primary outcome will be the point-prevalence smoking abstinence rates at week 24 verified with expired air carbon monoxide. Adolescents will be recruited for participation in the study from four geographically and ethnically



diverse locations. The study will be conducted by the Mayo Clinic, Rochester, MN and the University of Wisconsin, Madison, WI.

**Project Title: MEDIA INTERVENTION TO PREVENT YOUTH ALCOHOL USE**

**PI Name:** FLYNN, BRIAN S.

**Institution:** UNIVERSITY OF VERMONT & ST AGRIC COLLEGE

**Project Start:** 01-MAY-1996

**Project End:** 30-APR-2001

**Funding Agency/Institute:** NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM

**Abstract:** Alcohol use and misuse is so prevalent in our society that a majority of young people begin drinking years before it is legal for them to do so. As many as 30% become regular drinkers (monthly or more often) by grade 8, with the steepest increases between grades 5 and 7. These youth become the core of a larger group of drinkers in later adolescence, many of whom have problems with alcohol which impair their development and may become more severe in adult life. The purpose of the Interactive Projects for Alcohol Prevention (IPAP) is to develop and test a comprehensive, yet cost-efficient, combination of mass media and community interventions supporting young people in developing healthy lifestyles and deterring alcohol use. These interventions will be coordinated with existing school curricula from grades 4-5 through grades 7-8. The intervention approach is based on evidence of drinking by very young adolescents, theoretical models identifying modifiable intrapersonal, social, environmental and behavioral factors, and proven mass media and community models for health behavior change. A mass media campaign will target young people to reduce the demand for alcohol through positive images of non-drinking lifestyles; these messages will begin in grades 4-5 and continue over a four-year period. Media messages will be developed and receive preliminary effectiveness testing in the companion IPAP proposal. Parents of these young people also will be targeted by a mass media campaign modeling supportive parent behaviors. A community intervention program will be focused on reducing availability of alcohol for young adolescents through cooperative actions of parents, school officials, alcohol retailers, law enforcement officers, and local government officials. The interventions will be evaluated in a controlled design with eight rural Vermont school districts receiving the interventions and eight receiving measurement only. Cross-sectional surveys of 2800 students in grades 7-8 from intervention and comparison districts will be conducted at baseline and immediately after the four-year interventions to determine prevalence of alcohol use and related behaviors. A comprehensive theory-based set of measures will assess the impact of the interventions on mediators of drinking behavior. It is hypothesized that regular drinking among grade 7-8 students will be reduced by one-third in districts receiving this combination of powerful interventions. Process evaluation will assess the immediate impact of intervention components on the targeted students, their parents, and other key adults in their communities.

**Project Title: THEORY BASED DRUG ABUSE PREVENTION FOR VIDEO GAMES**

**PI Name:** RAPOZA, DARION

**Institution:** ENTERTAINMENT SCIENCE, INC., DURHAM, NC 27712

**Project Start:** 30-SEP-1998

**Project End:** 30-SEP-2000

**Funding Agency/Institute:** NATIONAL INSTITUTE ON DRUG ABUSE

**Abstract:** Telepathy Entertainment will develop and test an interactive multi-user role-playing game for the Internet that utilizes theory-driven, experimentally validated methods to promote abstinence from substance abuse. The purpose of the video games is to condition players to avoid alcohol and other drugs through role-playing. The popularity of this type of game with young people will allow widespread dissemination of this prevention strategy. In Phase I, a facsimile of the game will be developed and administered to subjects in order to test the hypothesis that a role-playing game of this design can effectively promote attitudes known to be associated with drug abstinence. A pre-test, post-test survey methodology will be used to evaluate the outcome of the intervention. In Phase II, the engine-driven software for the game will be developed and evaluated as a prevention strategy. PROPOSED

COMMERCIAL APPLICATION: Telepathy Entertainment will test, prove, and produce a cutting-edge, multi-player video game that encourages abstinence from substance abuse. The game will incorporate a drug effects/substance abuse prevention software library for use in stand-alone (console, computer, etc.) and Internet-based role-playing/action/adventure video games for the entertainment and education markets. Market opportunities include: 1. School-based substance abuse prevention program, as a 'computer laboratory' adjunct to existing curricula. 2. After school and community-based activity programs, especially those targeted at high-risk populations. 3. Over-the-counter, mail order, and on-line download sales to curious teens and prevention-minded parents. 4. On-line advertising sales and corporate sponsorships. 5. Licensing of the software engine, the substance abuse prevention software library, or the prevention methodology itself to other developers interested in incorporating substance abuse prevention into their own games.

### **Sexual Behavior, Sexually-Transmitted Disease, and HIV/AIDS**

**Project Title: MULTIMEDIA FOR TEEN PREGNANCY AND STD/HIV PREVENTION**

**PI Name:** CHURCHILL, RUSSELL J.

**Institution:** AMERICAN RESEARCH CORP OF VIRGINIA, RADFORD, VA 24141

**Project Start:** 15-SEP-1997

**Project End:** 31-AUG-1999

**Funding Agency/Institute:** NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT

**Abstract:** The sexual behavior of American adolescents has become a national concern. One out of every ten females between the ages of 15 and 19 has a pregnancy each year, and, by age 21, approximately one out of every five young people has required treatment for a sexually transmitted disease (STD). Although education is but one among many interventions that should be employed to reduce teenage pregnancy and STD infection, new technologies, such as interactive multimedia, have rarely been investigated as delivery media for sexuality instruction. To exploit the potential of multimedia for effecting behavioral change among teenagers, American Research Corporation of Virginia proposes the ongoing development of "Promotion of Responsible Sexuality with Multimedia" (PRISM), a fourth generation sexuality education program presented by interactive multimedia and targeted for adolescents in grades 9 and 10. The Phase I program yielded a proof-of-concept presentation consisting of text and graphics that focused on pregnancy prevention. Phase II specific aims include development of additional instructional activities for pregnancy and STD prevention, integration of the instructional activities with full motion video and audio, and evaluation of the intervention with regard to changes in knowledge, attitudes, and behavior.

**PROPOSED COMMERCIAL APPLICATIONS:** With the phenomenal growth of home computer purchases, potential markets of the proposed software include families with adolescents as well as schools. In a school environment, the program could be integrated with existing school sexuality education programs or implemented as a stand-alone curriculum. With the increased popularity of juvenile electronic bulletin board services, the program could be advertised and distributed by state and private educational networks.

**Project Title: MULTIMEDIA HIV/STD PREVENTION CURRICULUM-MIDDLE SCHOOLS**

**PI Name:** GOLDSWORTHY, RICHARD C.

**Institution:** ACADEMIC EDGE, INC., LEXINGTON, KY 40504

**Project Start:** 15-SEP-2000

**Project End:** 14-SEP-2001

**Funding Agency/Institute:** NATIONAL CENTER FOR RESEARCH RESOURCES

**Abstract:** Adolescents who have sexual intercourse have the highest rates of STDs of any age group. This project addresses the need for readily available, interesting, and effective prevention curriculum by combining the use of multimedia, streaming video, and web-based conferencing with research-based

prevention curriculum components. An experienced regional theater group will be streamed over the net into health classrooms followed by a period of online discussion of the skits with the actors participating in the dialogue. Additional materials include expert guest discussions, easy-to-understand support materials, and pointers to additional information. Materials will be delivered in various technological formats to increase accessibility. The primary product will be a book plus CD-ROM that contains archived sessions and teacher support. The CD-ROM will link to the web for updated resources and new sessions. Phase I will (1) produce a full curriculum design document, (2) produce three of these serials, (3) create in-class support materials, (4) setup the online conference rooms, and (5) integrate these resources within a web-based learning environment. Design and development will follow a user-centered design methodology with teacher and student participation in several iterations of the various components of the package. Three summative evaluation activities will be conducted as part of the test of feasibility: analysis of (1) the classroom experiences when using the materials, (2) the online dialogue of the student-participants, and (3) the data gathered from a pre-post design. **PROPOSED COMMERCIAL APPLICATION:** The number of new cases of STDs is estimated to be approximately 15.3 million a year (Kaiser Family Foundation, 1999). Adolescents who have sexual intercourse have the highest rates of STDs of any age group (Berman & Hein, 1999). The STDs are a serious health problem among adolescents, causing serious damage to more teenagers than do all other communicable diseases combined (Yarber, 1983). School mental health personnel and teachers are often unprepared to teach STD prevention effectively and need effective, engaging prevention curriculum materials. Innovative, web-enhanced prevention curriculum materials that are easy to use and easy to integrate into existing curricula strands should prove popular with schools and health agencies. Distributing interactive theater in this manner moves it from a local, one-time expenditure often perceived as unjustifiable to the status of a long-term curriculum purchase. The use of a book/CD product as an entryway to the rich media resources also positions the product as a justifiable expenditure—an important issue because of the current general lack of acceptance of Internet subscriptions: folks like to have a product in hand. Private schools, home school, and other parents, represent additional markets.

### **Physical and Mental Health**

**Project Title:** ASTHMA INTERVENTION USING A SUPER NINTENDO VIDEO GAME

**PI Name:** SHAMES, RICHARD

**Institution:** STANFORD UNIVERSITY

**Fiscal Year:** 2000 (and earlier)

**Funding Agency/Institute:** NATIONAL CENTER FOR RESEARCH RESOURCES

**Abstract:** The goals of this project are to develop, implement, and evaluate a multiple-component intervention to reduce asthma morbidity among underserved and disadvantaged 5-12 year old inner city children with asthma. The intervention will focus on (1) improving asthma self-management by children with asthma and their caretakers, (2) changing behavior/compliance through the use of a novel Super Nintendo asthma video game and asthma hotline service, and (3) improving quality of health care services through facilitated referral to an asthma specialist. The project is a randomized clinical trial of a behavioral, educational and medical intervention to attempt to reduce morbidity among high-risk school-age children with asthma. Asthmatic subjects will be identified from inner city clinic populations at four local sites and from the community and randomized to participate in the intervention or to receive their usual care (placebo group). The components of the intervention include: (1) Asthma education by a skilled asthma counselor (nurse specialist), (2) use of the Super Nintendo asthma video game, (3) an asthma hotline, and (4) facilitated referral to an asthma specialist. Intervention group subjects will be followed by regular telephone contact over 6 months with scheduled assessment 6 and 12 months after enrollment. The intervention components targeting children with asthma and their parents/caretakers are intended to promote adoption of asthma self-management behaviors of appropriate asthma care behaviors. Our proposal to integrate multiple interventions, to provide appropriate asthma teaching, to target and

alter the behavior/compliance of children and parents/caretakers in the context of appropriate medical management will be based on the principles of social cognitive theory (see background). All four processes, Attention, Retention, Production and Motivation, will be emphasized in all elements of all behavior change components of the intervention, and will guide the macro and micro development and implementation of all behavior change components of the overall program. The patient population will be urban underserved children ages 5-12 years with chronic moderate to severe asthma, a 6 month history of episodic wheezing, breathlessness, cough or chest pain, FEV1 65-90% predicted at the time of enrollment, exacerbations of asthma occurring at least twice weekly, or asthma symptoms occurring 3 or more days a week, or daily use of a beta2-agonist to control symptoms, or interrupted sleep or activity, and at least one prior hospitalization for asthma in the past 12 months or 2 ER/acute care/unscheduled MD visits for asthma in the previous 12 months. Children who cannot learn to play Nintendo games or are visually handicapped, or who are unable to speak either English or Spanish, or who have a history of other chronic lung disease including CF, bronchiectasis, immune deficiency, ABFA, congenital lung anomaly or other chronic cardiac, GI, neurologic or renal disease, or children currently under specialty asthma care by an allergist or pulmonologist or who have received such care in the previous 6 months will be excluded. The primary outcome variable is the prevalence of Asthma "Sick Days" during the four two week intervals following enrollment. This is calculated for each subject each day of the diary record as a score of 3 ("severe") or 2 ("moderate") for any asthma symptom interfering with daily activity, OR school day missed due to asthma OR night awakening due to asthma OR disrupted activity due to asthma. The primary objective of the proposed intervention is to decrease the prevalence of Asthma "Sick Days" to a degree that has clinical or policy significance. How well this objective is achieved will be assessed by comparing the treatment and control groups over the first year of their participation. The analytic approach described for the primary outcome measure will also be applied to all secondary outcomes: (a) asthma-related utilization of emergency department/acute care, hospital admissions and inpatient days; (b) objective measures of asthma status including peak flow measurement from the sick day diaries, and pulmonary function testing (FEV1); (c) functional health status from the AAP Children's Health survey for asthma; (d) asthma knowledge and self-management behaviors among children with asthma and their caretakers, (e) direct and indirect cost of asthma care and (f) caretaker satisfaction with asthma care.

**Project Title: INTERNET-BASED OBESITY PREVENTION FOR BLACK ADOLESCENTS**

**PI Name: WILLIAMSON, DONALD A.**

**Institution: LSU PENNINGTON BIOMEDICAL RESEARCH CTR**

**Project Start: 01-MAR-2000**

**Project End: 28-FEB-2003**

**Funding Agency/Institute: NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT**

**Abstract:** Overweight in adolescence affects 30 percent of African-American girls and is an important target for preventive efforts because of its implications for lifelong increased health risk. We have assembled a multidisciplinary team of scientists from the Pennington Biomedical Research Center and from Louisiana State University to test the efficacy of an Internet-based secondary prevention program for obesity in African-American adolescent girls who are overweight and at risk for chronic obesity. We will recruit families from rural areas of South Louisiana, which is an underserved population with very significant health problems. The project will test the hypothesis that a family-oriented behavioral Internet-based intervention is more efficacious for weight loss than an Internet-based nutrition education condition. Adolescent participants who are overweight and have at least one obese parent will be randomly assigned to one the of two experimental conditions. Both the behavioral intervention and the control condition will utilize the Internet to provide health interventions which will span two years. The behavioral intervention will focus upon the promotion of healthy eating and exercise for weight management in the overweight adolescent girls and the obese parent. The primary endpoints for the study will be Body Mass Index, expressed as percentile for a particular age, and percent body fat, as measured by dual-energy absorptiometry. Secondary endpoints will measure a variety of health indicators and

health behaviors. The project's major strength is its use of an innovative approach, an interactive Internet program, to promote compliance. Internet interactions with the research team will be frequent, and will supplement less frequent face-to-face contact in therapy sessions. We hypothesize that the Internet-based behavioral intervention will remove obstacles to treatment such as travel and significant time commitments by the family, thereby enhancing compliance with the behavioral prescriptions of the program. This program can be conceptualized as a secondary prevention program since adolescent participants will be overweight and the development of chronic obesity in adulthood may be circumvented if the behavioral Internet-based intervention is successful. Furthermore, if this approach is successful, the technology lends itself to widespread implementation.

**Project Title:** INTERNET-BASED INTERVENTIONS FOR YOUTH DISORDERS

**PI Name:** CLARKE, GREGORY N.

**Institution:** KAISER FOUNDATION RESEARCH INSTITUTE

**Project Start:** 17-AUG-2000

**Project End:** 31-MAY-2005

**Funding Agency/Institute:** NATIONAL INSTITUTE OF MENTAL HEALTH

**Abstract:** This application proposes to develop and pilot several variants of Internet WWW mental health "self help" skills training sites for children, adolescents and parents. The two main interventions will address adolescent depression and child behavior problems, as representatives of internalizing and externalizing disorders. The development process will involve piloting these skills-training Web interventions in several representative settings—a large non-profit HMO, a public health clinic, and in public schools—while integrating them with more traditional health care delivery. Users will be permitted to log onto the interventions Web sites from the home or work settings as well. Using both qualitative and quantitative data, we will evaluate the acceptability and satisfaction with these interventions from the perspective of users (patients themselves), providers, and other pertinent stakeholders in each of the settings listed above. We will also conduct effect-size and effect-size variability estimates of the impact of these interventions on both clinical outcomes as well as health care utilization and costs, as a preliminary to conducting full randomized controlled trials. The research team will build on their experiences developing and evaluating several in-person psychotherapy treatments, an Internet depression intervention for adults, and an interactive multimedia software for assessing and intervening with disruptive behavior disorders. This proposed Internet-based intervention development application is significant because (1) Web-based interventions may help address unmet need, and overcome barriers to mental health service; (2) The intervention takes a public health perspective that is unusual in mental health. There will likely be low intensity intervention effects, but because the program will be available to a much larger percentage of the population than typically receives person-to-person services, the overall population effect is likely to be of significant magnitude; (3) The low intensity nature and low incremental cost of delivery of the Web-based interventions suggest that they may be cost-effective; (4) The proposed web interventions address a gap in the existing pool of mental health resources on the Internet at the present time, because they will provide access to Internet-appropriate versions of rigorously tested, research based interventions.

### **Violence and Injury Prevention**

**Project Title:** INTERACTIVE MULTIMEDIA FOR PREVENTION OF SEXUAL ASSAULT

**PI Name:** CHURCHILL, RUSSELL J.

**Institution:** AMERICAN RESEARCH CORP OF VIRGINIA, RADFORD, VA 24141

**Project Start:** 01-SEP-1999

**Project End:** 30-SEP-2000

**Funding Agency/Institute:** NATIONAL INSTITUTE OF MENTAL HEALTH

**Abstract:** The U.S. Department of Health and Human Services has identified the need for an effective sexual assault prevention program for adolescents and young adults. In response to this need, American Research Corporation of Virginia proposes the development and evaluation of CD-ROM-based interactive multimedia for preventing sexual assault among women in high school and in college. Interactive multimedia is the integration of text, graphics, and audiovisual media with computer-based information retrieval techniques to enable a user to view information in a nonlinear, intuitive manner. In Phase I, the target population will be young adults in college, and grant specific aims will entail development of instructional content and scripts for video portions of the program, integration of the content with multimedia presentation technology, and evaluation of the Phase I system with regard to usability and changes in knowledge and attitudes. In Phase II, sexual assault prevention programs will be developed for adolescents in grades 9-12 and for young adults who are not in college, and changes in behavior in comparison to more traditional forms of instruction will be ascertained using a large sample from the target population in a pretest-posttest experiment with control group. **PROPOSED COMMERCIAL APPLICATIONS:** Potential markets of the proposed program include schools, universities, and home users. In a school environment, the program could be integrated with existing prevention programs or implemented as a stand-alone curriculum. A potential mode of delivery to the home market is through conversion of the program to interactive television format, such as Sony Playstation technology.

**Project Title: INTERACTIVE MULTIMEDIA FOR YOUTH VIOLENCE PREVENTION**

**PI Name:** SHAPIRO, JEREMY P.

**Institution:** EDR CORPORATION, CLEVELAND, OH 44122

**Project Start:** 30-SEP-1996

**Project End:** 31-MAR-1999

**Funding Agency/Institute:** NATIONAL INSTITUTE OF MENTAL HEALTH

**Abstract:** The purpose of this project is to develop and evaluate an interactive multimedia product, on CD-ROM, designed to teach violence prevention skills to youth and thus prevent mental disorders and promote mental health. The program would be designed to change violence-related attitudes and strengthen conflict-related psychosocial skills. The software would make interactive use of video, audio, graphics, text, and music. There would be didactic material and exercises, packaged as games, involving application of the material. In one game, the user sees a video depiction of a conflict, chooses a behavior for the character, and then sees video portraying that choice and its likely interpersonal consequences. Research subjects would be 3,000 6th-8th grade students in an urban and a suburban school system. The experimental design would compare the product to a curriculum-based, teacher-delivered program with similar content. There would be four experimental conditions: CD-ROM, curriculum, both, and control. Subjects will be assessed at three time points (four month intervals). We will examine effects of the interventions on violence-related knowledge, attitudes and behavior, using self-report, teacher-report, school archival, and juvenile court data. The project involves a synthesis of research on youth violence and its prevention with the emerging technology of interactive multimedia. **PROPOSED COMMERCIAL APPLICATION:** Youth violence is a problem of serious concern to schools. Existing preventative intervention do not seem to have an optimal level of effectiveness. The proposed interactive multimedia product has the potential to make an important contribution to youth violence prevention. Also, the product would be less expensive and easier to use than traditional interventions. There is major commercial potential in the school market and in other youth-related markets as well.

**Project Title: PREVENTING CHILDHOOD INJURY WITH AN INTERACTIVE WEB SITE**

**PI Name:** ALDAY, CAROLINE S.

**Institution:** ABACUS MANAGEMENT TECHNOLOGIES, LLC, CRANSTON, RI 02920

**Project Start:** 30-SEP-2000

**Project End:** 30-SEP-2001

**Funding Agency/Institute:** NATIONAL CENTER FOR INJURY PREVENTION AND CONTROL

**Abstract:** Scientific evidence indicates risk factors associated with passenger, bicycle, and pedestrian safety behavior account for the majority of roadway accidents resulting in death or injury to children 7 to 12 years of age. In the majority of these deaths and injuries, the child's behavior contributed to the injury (e.g. failing to wear a bicycle helmet, darting out into traffic, failing to wear a seat belt, etc.). An innovative, engaging, interactive Web site with games, activities, and a simple animated story line, when combined with the behavioral model of observation, coaching and feedback, could teach the behaviors integral to passenger, bicycle, and pedestrian safety. In Phase I, a prototype Web site with companion print materials will be developed and evaluated systematically using a qualitative and iterative methodology. The Web-based tool will be evaluated in focus groups and in-depth interviews by children, parents, and school curriculum coordinators. In Phase II, evaluation of the prototype will be expanded to include a quantitative comparative study to examine the impact of the Web site on outcome measures of safety knowledge and safety behaviors and ultimately on incidence of bicycle-, pedestrian-and passenger-related injury. **PROPOSED COMMERCIAL APPLICATION:** The goal of this Phase I proposal is to develop an innovative, interactive Web-based tool to teach roadway safety to children. This web-based tool would have companion print materials and be designed to complement a school curriculum focused on health and safety. Our partner, Arbella Mutual Company, has a history of supporting health promotion and roadway safety projects and has demonstrated an interest in promoting and disseminating a Web site application to address the safety needs of children.

### **Interactive Media as a Learning Tool**

**Project Title:** GIRLS DIG IT ONLINE: AN INTERNET ARCHAEOLOGY RESOURCE FOR GIRLS

**PI Names:** HEATHER JOHNSTON NICHOLSON AND RAY SHORTRIDGE

**Institution:** GIRLS INCORPORATED

**Project Start:** JANUARY 1, 2000

**Project End:** JUNE 30, 2001 (ESTIMATED)

**Funding Agency/Institute:** NATIONAL SCIENCE FOUNDATION

**Abstract:** Girls Dig It Online will expand, refine, and field test the Internet-enhanced learning component of Girls Dig It, a nationwide Girls Incorporated archaeology program for girls ages 12-14 currently being piloted at six test sites across the country. Girls Dig It Online will be piloted at four of the six Girls Dig It pilot sites - Santa Barbara, CA; Bloomington, IN; Lynne, MA; and St. Louis, MO - which have been selected for their archaeological resources and technological readiness. The program will reach out to low-income girls and girls of color in the critical early adolescent period when girls have traditionally traded in their interest in science, mathematics, and technology for other pursuits. Girls Dig It Online will use the popularity of archaeology - a science that captures the imaginations of young people - as a bridge to sustained participation in science and technology education for girls. The program will engage girls in discovery-based girl-centered activities that build their understanding of the principles of scientific investigation while building collaborative research teams at and among each of the four pilot sites. The computer-enhanced learning environment will include interactive online components for girls including: 1) A password-protected threaded discussion area hosted by a team of practicing professional archaeologists; 2) A monthly "Ask the Scientist" program that will create the opportunity for girls to ask questions of women scientists working in archaeology and related sciences; and 3) A publicly accessible area where girls will create and publish online science exhibitions chronicling their archaeological investigations, including photos, drawings and measurement records of artifacts being studied, hypotheses regarding the sites being excavated (either in simulation or as assistants to professional archaeologists) and debates about the validity of their hypotheses. Building on its strong foundation of informal science education, including Eureka! Career Development for Teen Girls through Math, Science and Sports; Operation SMART, Science, Math and Relevant Technology, and on its new initiative, GirlsLink, an effort to equip girls with technology skills to enhance their education and career preparedness, Girls Dig

It Online promises to attract new groups of girls both to science through archaeology and to information technology through interactive and sophisticated uses of computer and Internet technology in a supportive environment.

**Project Title: GIRLS RE-DESIGNING AND EXCELLING IN ADVANCED TECHNOLOGY (GREAT!)**

**PI Name:** JUDY A. BROWN

**Institution:** MIAMI MUSEUM OF SCIENCE

**Project Start:** JUNE 1, 2001

**Project End:** JUNE 30, 2004 (ESTIMATED)

**Funding Agency/Institute:** NATIONAL SCIENCE FOUNDATION

**Abstract:** The Miami Museum of Science proposes to design and implement an innovative model program to increase the confidence, interest, and preparedness of girls to pursue academic and employment opportunities related to high end careers in the field of information technology (IT). Titled GREAT! (Girls Redesigning and Excelling in Advanced Technology), the project will build on the body of research related to girls and IT to develop and model effective methodologies for engaging girls as designers—as opposed to simply users—of IT applications. The overall goal of GREAT! is to raise interest and skills in advanced technology applications among middle school girls, particularly girls of color, resulting in increased representation of females in academic programs and employment opportunities leading to high end IT careers. Specific objectives of GREAT! are to build girls' confidence and expertise with advanced technology applications; to engage them in the use of advanced technology to solve real world problems; to strengthen girls' communication and presentation skills; to contribute to and inform the field through a comprehensive evaluation of project outcomes, and to disseminate project methodologies and findings among informal science education institutions and other interested parties.

The Museum will collaborate with Miami Dade County Public School's Urban Systemic Program to recruit 40 middle school girls each year, for a total of 120 girls over the duration of the project. Over the course of a two year period, participants will assume the roles of IT designers, acquiring progressively complex technology skills culminating in the creation of a fully interactive 3 D virtual Museum exhibit experience. Girls will begin by participating in a 12 week Saturday Technology Workshop which will take place over the course of the academic year. Following completion of the Technology Workshop series, girls will take part in a 4 week intensive summer Design Studio in which they will use state of the art virtual reality (VR) technology to create a VR production showcasing an invention of their own design. Girls will work in teams of four, with each team assigned a mentor (a female college student majoring in computer technology or a related field) who will provide technical guidance and serve as a role model. Upon completing their productions, girls will strengthen their presentation skills and increase self esteem and self confidence through Family Night presentations and by exhibiting and interpreting their work to visitors in the Museum galleries for a one month period during the subsequent academic year.

**Project Title: HIV/AIDS EDUCATION FOR ADOLESCENTS—A CD-ROM CURRICULUM**

**PI Name:** MCGRAW, SARAH A.

**Institution:** NEW ENGLAND RESEARCH INSTITUTES, INC, WATERTOWN, MA 02472

**Project Start:** 01-DEC-1995

**Project End:** 31-MAY-2000

**Funding Agency/Institute:** NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES

**Abstract:** The purpose of this SBIR is to develop an easy-to-use and informative state of the science CD-ROM interactive computer program for high school students which will focus on HIV/AIDS, reduction of risk behavior and negotiation skills. Although most adolescents have been provided with some formal instruction about HIV/AIDS, misconceptions still persist and rates of risky behavior continue to be a cause for concern. In Phase I, a CD-ROM prototype illustrating the overall design and format for the



program and providing two segments of the final product was developed. The prototype was evaluated through four focus groups involving adolescents and teachers, and revisions were then made in response to the groups' suggestions. The content for the full program was also developed following a literature review and an examination of prevention curricula used throughout the country. In Phase II, the full CD-ROM will be produced, including all interactive and linear video, animation, text, and audio. It will be evaluated in two high school districts and will be revised based on that evaluation. An accompanying teacher manual will also be developed. The final products for Phase II will be a kit containing the revised CD-ROM and the teacher's manual. Proposed commercial applications: The target group of this CD-ROM program would be schools or other educational or health organizations serving adolescents ages 15-19. This product would be distributed through professional organizations such as the American School Health Association and the National Education Association. In addition, the product would be distributed through an independent distributor. Both Select Media and man Relations Media have expressed great interest in this program.

**Project Title: A SINGLE-PLAYER DRUG ABUSE PREVENTION VIDEO GAME**

**PI Name:** RAPOZA, DARION

**Institution:** ENTERTAINMENT SCIENCE, INC., DURHAM, NC 27712

**Project Start:** 29-SEP-2000

**Project End:** 31-DEC-2001

**Funding Agency/Institute:** NATIONAL INSTITUTE ON DRUG ABUSE

**Abstract:** The broad aim of this Fast-Track application is to develop an engaging single-player role-playing game that utilizes theory-driven, experimentally validated methods to promote abstinence from substance abuse. The limited effectiveness of conventional substance abuse prevention interventions, such as the popular D.A.R.E. program, attests to the need for the development of new, more powerful prevention techniques. Video games have so great a potential to influence the behavior of American youth that congress has held hearings concerning their content and passed legislation governing their labeling. Behavioral principles that have been identified through years of scientific research are of proven value in influencing behavior, and could be utilized to design video games that are highly effective in preventing substance abuse. In Phase I, a facsimile of the game planned for development in Phase II will be produced and used to establish the quality of Entertainment Science's performance and to demonstrate the technical merit and feasibility of creating a drug abuse prevention video game. A seven point Likert scale will be used to assess the game's usability and enjoyability on a 20 item survey instrument. Mean usability and enjoyability ratings of five or greater will be taken as evidence that the Phase I objectives have been met. **PROPOSED COMMERCIAL APPLICATION:** The applicant will develop a single-player video game that encourages abstinence from substance abuse. Market opportunities include 1) school-based substance abuse prevention programs, as a "computer laboratory" adjunct to existing curricula; 2) after school and community based activity programs, especially those targeted at high-risk populations; 3) direct over the counter, mail-order, and on-line download sales to curious teens and prevention-minded parents; 4) advertising sales and corporate sponsorships.

**Project Title: USER-FRIENDLY SCIENCE AND MATH SOFTWARE FOR EARLY ADOLESCENT GIRLS**

**PI Name:** MARY D. FLANAGAN

**Institution:** SUNY BUFFALO

**Project Start:** DECEMBER 1, 1999

**Project End:** NOVEMBER 30, 2000 (ESTIMATED)

**Funding Agency/Institute:** NATIONAL SCIENCE FOUNDATION

**Abstract:** This project will create online, user-friendly software for girls ages 9-11. The Adventures of Josie True will be web-based software for girls designed to encourage exploration and promote confidence in math and the sciences in multicultural, educational software. Using an adventure game as the premise, lead character Josie True and her friends become involved in intrigue across time and space

as they rescue their inventor-turned-teacher Ms. Trombone. During their travels, girls will meet innovative women from history who will serve as multicultural role models. In addition to exploring rewarding activities based on science and math curricular topics, girls will be able to learn about women's history through technologies that allow girls to "interview" women like Bessie Coleman, the first female African-American aviator. Throughout this software development project, we will offer girls a healthy and entertaining set of educational alternatives; the project will develop an online community, provide a sense of adventure, invite participation, and offer positive, real-life role models while using technology to encourage experimentation with science and math. Players will explore the software with their "host" Josie True, an 11-year-old Asian-American girl, though time and space as they search for the great African American Pilot, Bessie Coleman. The characters travel in time to 1922 Chicago to save their missing science teacher and become embroiled in adventure. This narrative provides the context for science and math based learning activities. Josie True will provide all girls, especially girls who have had fewer opportunities, a chance to interact in science activities and "meet" role models. We pay special attention to female innovators and scientists to provide positive, "technological" female role models to help encourage girls to explore the sciences while advancing creative thinking, problem solving, and originality. We hope this project will increase time girls spend with the computer, increase their comfort level with technology, improve their learning by contextualizing concepts and problem solving, and provide characters engaged in science, math, and technology in order to promote scientific concepts and the associated disciplines. Josie will be promoted with textbook publishers, national school boards, and international education organizations. In addition, as an Internet-based activity, Josie True will be accessible wherever the Internet is, such as public libraries and some schools.

### **Working with Youth with Disabilities**

**Project Title:** INTERACTIVE MULTIMEDIA CD ROM FOR SOCIAL SKILLS IN ADHD

**PI Name:** GOLDSWORTHY, ELIZABETH L.

**Institution:** ACADEMIC EDGE, INC., LEXINGTON, KY

**Project Start:** 30-SEP-1997

**Project End:** 30-JUN-2001

**Funding Agency/Institute:** NATIONAL INSTITUTE OF MENTAL HEALTH

**Abstract:** The purpose of this project is to design, develop, and evaluate an integrated media intervention that will assist in the acquisition of age appropriate social problem-solving skills by ADHD, CD and other adolescents. The IMI is (1) an interactive "game" type multimedia CD-ROM allowing the participants to make problem-solving decisions about various social situations and then explore the consequences of these decisions for themselves and others; and (2) a package of classroom implementation materials-including videos, handouts, and teacher training materials-that introduce and support the development of social problem-solving skills. The developed packaged will allow for the widespread distribution of training procedures that have proven to be effective for children and adolescents with disruptive behavior disorders. By using the latest computer graphics and media capabilities, it is possible to develop a training program with components that approximate the computer games currently on the market that children find so challenging and entertaining, and simultaneously promote effective social competence. Design and development will follow a User-Centered Design methodology. Three evaluation activities will be conducted: (1) formative evaluation, (2) a pre-post experimental design, and (3) a qualitative evaluation consisting of an actor-network analysis of an intact, mainstreamed classroom using the intervention. **PROPOSED COMMERCIAL APPLICATIONS:** The IMI will be a cost-effective means of providing social problem-solving treatment to large numbers of students. The IMI is especially viable since recent legislation mandates schools develop effective interventions for children with disruptive, aggressive behavior. This viability is particularly evident since many school systems are finding their mental health support staff, must spend a great deal of their time doing assessments and conducting meetings rather than in intervention implementation. Any intervention that can be accomplished through self-paced computer

instruction or by teachers in the classroom should prove to be beneficial to and popular with social agencies, parents and schools.

**Project Title: LITERACY INTERVENTION TUTORIAL (LIT)**

**PI Name:** WHITNEY, ANNE

**Institution:** SOPRIS WEST, INC., LONGMONT, CO 80504

**Project Start:** 19-SEP-2000

**Project End:** 18-SEP-2001

**Funding Agency/Institute:** NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT

**Abstract:** Sopris West will develop an interactive, multimedia staff development program for educators, which utilizes current research and best practice for remediating and teaching reading, writing, and spelling to children and adolescents with learning disabilities and language delays. The Literacy Intervention Tutorial (LIT) will effectively combine the best of traditional staff development methods with state-of-the-art technology in a delivery system that is efficient, cost-effective, and readily accessible to all educators. Phase I Goals: 1. Use current research on effective literacy intervention practices to sequence content into a series of logical modules. 2. Determine most effective media and information technologies to deliver content through "best" instructional practice. 3. Create blueprint for developing a comprehensive, multimedia-training program. 4. Pre-produce instructional components. 5. Produce one prototype-training module. 6. Test and evaluate effectiveness of the prototype module. 7. Write final Phase I report to include process, data, evaluation, and recommendations for revision. Phase II Goals: 1. Revise blueprint for module design based on evaluation data from Phase I. 2. Using content identified in Phase I, pre-produce all components that comprise LIT. 3. Produce all modules. 4. Field test and evaluate effectiveness of the complete LIT product. **PROPOSED COMMERCIAL APPLICATIONS:** This research will provide the basis for producing a multimedia literacy intervention program, through which, educators will gain access to current science in literacy intervention at anytime and from anywhere. As an alternative to traditional face-to-face staff development, the flexibility, cost effectiveness and critically important content of LIT will strongly appeal to educators in public and private schools, adult education/community programs, DoDEA and American schools overseas, and prisons and correctional facilities.

### **Dangers of Interactive Media**

**Project Title: YOUTH, TECHNOLOGY, AND THE PROLIFERATION OF DRUG USE**

**PI Name:** MURGUIA, EDWARD E.

**Project Start:** 30-SEP-2001

**Project End:** 31-AUG-2003

**Funding Agency/Institute:** NATIONAL INSTITUTE ON DRUG ABUSE

**Abstract:** (provided by the applicant): Several drugs, popularly used by adolescents at dance parties, raves, and clubs, have been shown to be a serious health concern to medical researchers. MDMA (ecstasy), Lysergic Acid Diethylamide (LSD), Rohypnol, Methamphetamine, Ketamine, and Gammahydroxybutyrate (GBH) are substances generally labeled "club drugs." Such drugs, while not necessarily new, have gained recent popularity though use at raves. The impact of these drugs on the health of youth has been researched in recent decades. While results are mixed, studies do suggest that ecstasy in particular may be associated with convulsions, cardiac and pulmonary problems, hypothermia, and in rare instances, death. However, ecstasy and other club drugs are most dangerous when used in combination. According to a recent SAMHSA Dawn Report, most medical emergency incidents involving club drugs also involved the use of alcohol, marijuana, cocaine, and other club drugs. Additional work also suggests that the use of polydrugs is common in the rave/club scene. This study proposes to explore the relationship between the Internet and the transmission of information among

youth about "club drugs." The Internet has figured prominently in the "rave scene" since the early years of the movement. The Internet has been a primary site of communication about rave parties, DJs, and artists. Moreover, it provides space for youth to connect with others involved in the rave scene through chat rooms and email subscription lists. While raves, house, and bush parties change locale often, the setting of web-based interaction remains static and constant. The role of Internet interaction in the use of club drugs has been unexplored. The current research proposes an Internet-based qualitative study of youth involved in Internet chat rooms and discussion boards. The goal of the research is to solicit new and pertinent information related to the context and setting of club drug use (e.g., when, where, and with whom are drugs primarily used; under what circumstances are some drugs chosen over others; etc.). Moreover, it will explore the role of the Internet in transferring and mediating information regarding drug use across settings (e.g., is the Internet a source of new information about drugs among users, how is Internet use related to the local club scene; do drug use trends disseminate through a "virtual community" or through local, geographically tied networks, how can the Internet be used a prevention and education tool among "club drug" users; etc.). For these reasons, the methodology for this project will involve the extension and adaptation of traditional ethnographic methods to the practice of cyber-ethnography. The project team will combine, as well as adapt field methods for what will at first be a largely unseen group of subjects. We will engage in a two-pronged approach to capture both the online and off-line (so-called 'real life') interactions and networks of the subjects. Primarily, field notes will be generated by monitoring online sites and participant observation in site-communications and other Internet-based communications with members of these communities (e.g. email and America Online Instant Messaging). In addition, we will construct an online survey administered to interested members.

**Project Title: TEENS AND EXPOSURE TO HIV RISK ON THE WEB**

**PI Name: DI CLEMENTE, RALPH J.**

**Institution: EMORY UNIVERSITY**

**Project Start: 10-JUL-2001**

**Project End: 30-JUN-2006**

**Funding Agency/Institute: NATIONAL INSTITUTE OF MENTAL HEALTH**

**Abstract:** Teen's exposure to sexual content on the Web and its effects on their sexual health is an important but understudied public health issue. To address this issue, we propose an interdisciplinary collaboration between researchers at two academic institutions (Emory University and the University of Georgia Public Health Information Technology Laboratory) and Harris Interactive, a leading Internet research company with a wealth of expertise. The proposed prospective study represents a unique opportunity to examine the effects of adolescents' exposure to Web pages that contain sexual content on the sexual health-related attitudes, beliefs and behaviors of a national probability sample of 865 teens (615 White and 250 African American male and female teens) 14-16 years of age. Specifically, the aims are: (1) to describe characteristics of teens who access Web pages that contain sexual health, sexually explicit and sexual related content; (2) to develop cross-sectional models examining the association between exposure to Web pages that contain sexual content and their sexual health-related knowledge, attitudes, beliefs, intentions and behaviors; (3) to prospectively examine the association between exposure to Web pages that contain sexual content and its effect on teens' sexual health-related knowledge, attitudes, beliefs, intentions and behavior over a 16-month follow-up period and; (4) to examine the effects of hypothesized moderators (i.e. parental monitoring, parental communication about sex, sociodemographics, other media exposures and exposure to sex education programs on the association between exposure to sexual content on the Web and hypothesized mediators and outcomes. To accomplish these aims, teens will be asked to complete Web-administered interviews (WAI) at baseline and at 4-, 8, 12 and 16-month follow-ups. Teens will also be asked to download and install Web tracking software on their home computer which will provide an objective measure of Web exposure to sexual content. The Web pages that teens access will be automatically collected biweekly and the Web pages subjected to "robotic" coding. The "robot" Web coder is designed to electronically screen the HTML of tracked Web pages to identify those that contain sexual content. Web pages found to contain sexual

content will be subjected to extensive content analysis by trained coders. Coders will use descriptive, contextual, and theoretically-informed categorization schemes to examine the characteristics of sexual content. Analyses will construct cross-sectional models to examine the relationship between teens' use of Web pages that contain sexually explicit, sexual health and sexually-related content, and their sexual health-related attitudes, beliefs, intentions and behaviors at 16-month follow-up, statistical analyses controlling for baseline assessments, will prospectively examine the relationship between teens' use of Web pages that contain sexually explicit, sexual health and sexually-related content and adolescents' sexual health-related attitudes, beliefs, intentions and behaviors. Given the controversy surrounding teens' exposure to sexual content on the Web, there is a compelling need to examine the impact of these exposures on teens' sexual health.

### **Miscellaneous**

**Project Title: CHILDREN'S DIGITAL MEDIA CENTERS**

**PI Names and Institutions:** SANDRA CALVERT (GEORGETOWN UNIVERSITY), PATRICIA M. GREENFIELD (U OF CAL LOS ANGELES), BARBARA J. O'KEEFE (NORTHWESTERN UNIVERSITY), ELIZABETH VANDEWATER (U OF TEXAS AUSTIN), ELLEN A. WARTELLA (U OF TEXAS AUSTIN)

**Project Start:** SEPTEMBER 15, 2001

**Project End:** SEPTEMBER 30, 2006 (ESTIMATED)

**Funding Agency/Institute:** NATIONAL SCIENCE FOUNDATION

**Abstract:** American children spend many hours with media each day. Although much of this time involves television viewing, an increasing amount involves participation with digital interactive entertainment technologies, including the Internet. Even television as we know it will soon change dramatically, with digital television adding improved clarity of images and the opportunity for interactivity. Knowing how to use these interactive technologies will be a necessary skill for an educated workforce in the 21st century and may be a gateway to studying science and technology. Therefore, knowing how children use and learn from these digital technologies is an important step in ensuring that children will develop these basic skills.

Although children invest their free time heavily in electronic entertainment media, relatively little is known about how new interactive media impact children's learning in informal learning contexts. One problem is that the field is interdisciplinary. Researchers examine diverse issues rather than examine specific areas of interactive digital media systematically and then consolidate that knowledge into a central information base. Another problem is the rapid change in digital technologies, making researchers one step behind the latest developments. One outcome of these problems is a poor knowledge base for understanding of how new digital entertainment technologies influence children's learning. Over the next 5 years, this Center will advance theory and method in how children learn through digital interactive entertainment media. Using an interdisciplinary team of researchers from the fields of psychology, human development, communications, sociology, anthropology, and medicine, researchers will explore multiple levels of analysis in order to explicate the role that dialogue, in the form of interactivity and identity, play in children's learning from entertaining interactive digital technologies. At a macro level, two types of surveys will be conducted to document patterns of change and similarity over time in children's access to, and use of, new and emerging digital platforms. These macro level studies will guide the direction of micro level experimental, observational, and ethnographic studies that will examine what interactivity is and how and what children learn from online digital experiences. Parallel research activities will examine children at different age groups, providing both cross-sectional and longitudinal findings on children's uses of media and the impact of media on their development.

Overall, these research activities will expand the knowledge base about: 1) the kinds of digital media that are emerging; 2) the kinds of interactive digital media experiences children choose to have; 3) the impact of these interactive experiences on children's long-term social adjustment and academic achievement; 4) how specific kinds of interactions with digital technologies impact children's learning; 5) how interacting with each other online influences children's learning and identity construction; and 6) how observational and interactive experiences are represented in the developing brain. This knowledge base will be disseminated in published form in professional journals, through presentations at national and international conferences, and via interconnected websites to create synergistic activities among the researchers, policy makers, child advocacy groups, and creators in the children and digital media field. The Children's Digital Media Centers, based at Georgetown University, will also include the University of Texas at Austin, Northwestern University, and the University of California Los Angeles. Centers will include a Steering Committee and an Advisory Board of distinguished colleagues.

**Project Title: MASS MEDIA AND ADOLESCENTS' SEXUAL HEALTH**

**PI Name:** BROWN, JANE D.

**Institution:** UNIVERSITY OF NORTH CAROLINA

**Project Start:** 26-SEP-2000

**Project End:** 31-JUL-2005

**Funding Agency/Institute:** NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT

**Abstract:** Adolescents in the United States continue to have the highest rates of teen pregnancy and one of the highest rates of sexually transmitted diseases in the post-industrial world. The mass media have been blamed for increasingly STD's. However, little is known about how media depictions affect teen's sexual beliefs and behaviors. This five-year project is one of the first population-based investigations of the link between teens' exposure to sexual content in the media and their sexual beliefs and behaviors. The project is based on the Media Practice Model that assumes that adolescents must choose among the array of media now available to them. Consequently, all teens will not have the same "diet" of sexual media content, and all will not be affected in the same ways. Data will be gathered in five phases: First, all 7th and 8th grade students (about 3,000) enrolled in nine middle schools in central North Carolina will complete a self-administered questionnaire about their use of the mass media. Second, the content the teens most frequently attend to in seven different media including television, movies, magazines, books, the Internet, etc. will be collected and analyzed for risky and health sexual portrayals. This is the first time the sexual content of the media has been assessed across the array of media teens attend to. The time each teen spends with each medium than will then be weighted by medium to create a measure of their sexual media diet — the time each teen spends attending to sexual content in the media. Third, a stratified (by race and gender) random sample of 1,000 of the students who completed the in school media questionnaire will be interviewed in their homes about their sexual knowledge, beliefs, and behaviors using a computer-assisted interviewing system to ensure privacy and confidentiality. Two years later, in Phases 4 and 5 of the project, the 1,000 students will be reinterviewed in their homes and another sample of media content will be analyzed to assess how media diets and sexual attitudes and behaviors have changed. The longitudinal and comprehensive design of this study will provide the most current understanding of how the mass media affect the sexual beliefs and behaviors of adolescents.

**Project Title: SCHOOL BASED USE OF THE POSIT**

**PI Name:** WYRICK, DAVID L.

**Institution:** UNIVERSITY OF NORTH CAROLINA GREENSBORO

**Project Start:** 01-JUN-2001

**Project End:** 30-MAY-2003

**Funding Agency/Institute:** NATIONAL INSTITUTE ON DRUG ABUSE

**Abstract:** The Problem Oriented Screening Instrument for Teenagers (POSIT) is a self-report measure that identifies stressors and potential problems in ten functional areas (e.g. substance use/abuse; mental

health; aggressive behavior/delinquency) for adolescents 12 to 19. The POSIT has primarily been used in juvenile justice and clinical settings to screen troubled youth. In contrast, adoption within school settings has been sparse. The goal of this project is to compare two methods of administration on self-reported behaviors as well as to examine the potential each method of administration has on adoption and use of the POSIT in school-based settings. Students will be administered the POSIT while in school using either a paper-and-pencil format or an Internet format that is augmented with audio (Audio-Web). Students will be randomly assigned as individuals to format of administration. Grade in school, gender, and ethnicity will be used prior to assignment as stratifying conditions. It is hypothesized that students' willingness to disclose the personal information called for in the POSIT will be enhanced through Audio-Web administration. To test issues about adoption and use, school principals and guidance counselors will be randomly assigned to receive recruitment presentations about one of the two modes of administration and will then be interviewed before and after student completion of the POSIT. Interviews will identify the effects that mode of administration may have in terms of potential barriers as well as facilitating effects related to their willingness to adopt and use the POSIT. Post-administration interviews will also examine the degree to which mode of administration effects guidance counselors' perceptions of data quality and usefulness. Hypothesized mode effects will be analyzed using analysis of variance (ANOVA). Findings will be used to explore practical means by which response bias can be minimized and improved and the adoption of the POSIT can be facilitated in school-based settings.

**Project Title: SMOKING CESSATION GAMES**

**PI Name:** KELMAR, CHERYL M.

**Institution:** MEDICALWORKS, SANTA BARBARA, CA 93101

**Project Start:** 01-JAN-1995

**Project End:** 28-FEB-1999

**Funding Agency/Institute:** NATIONAL HEART, LUNG, AND BLOOD INSTITUTE

**Abstract:** Up to a million teenagers become smokers annually (USDHHS, 1989) making cigarettes the most frequently used addictive substance on a daily basis by high school students (USDHHS, 1989). It is estimated that over four (4) million adolescents are regular smokers in this country constituting a significant potential public health problem. While prevalence of cigarette smoking continues to decline in adults (2), recent national surveys indicate the opposite for adolescents (3). The 1994 Surgeon General's report pointed to the need for research on teenage smoking cessation and for new approaches to this problem. Through the utilization of an interactive computer video format, credible peer role models, a game format, and creative images/messages, the games should move adolescent smokers along the continuum of quitting. During Phase I, the Introduction: Do I really Want to Quit? Title: Warriors was developed and pre-production focus groups conducted. This introduction was designed to reach consensus about a rationale for quitting. The animated educational tool is designed to present adolescents with a fun and experimental approach to smoking cessation education. In order to conduct the Phase I focus groups, a script was designed and a prototype developed. During Phase II, Smoking Cessation Games will be completed. The final product will be interactive video games that motivate adolescents to continue through the stages of smoking cessation.

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*Compiled below is the full list of references cited in the "Citation" section above.  
Note that references were not converted into a standard format.*

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