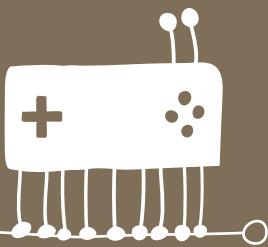


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Game changer:

Investing in digital play to advance
children's learning and health



Ann My Thai
David Lowenstein
Dixie Ching
David Rejeski

The Joan Ganz Cooney Center at Sesame Workshop

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The mission of the Joan Ganz Cooney Center at Sesame Workshop is to foster innovation in children's learning through digital media. The Center supports action research, encourages partnerships to connect child development experts and educators with interactive media and technology leaders, and mobilizes public and private investment in promising and proven new media technologies for children.

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Attn: Publications Department
The Joan Ganz Cooney Center
Sesame Workshop
One Lincoln Plaza
New York, NY 10023
p: 212 595 3456
f: 212 875 7308
cooney.center@sesameworkshop.org

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executive summary

Children are choosing to play digital games for hours during their leisure time. On an average day, children as young as eight spend as many hours engaged in media activity as they spend in school; three-quarters of American children play computer and video games.

Despite their reputation as promoters of violence and mayhem, digital games have in fact been shown to help children gain content and vital foundational and 21st-century skills. From digital games children can learn:

- Content (from rich vocabulary to science to history)
- Skills (from literacy to math to complex problem-solving)
- Creation of artifacts (from videos to software code)
- Systems thinking (how changing one element affects relationships as a whole)

Digital games can also be effective in improving children's health — from physical fitness and health promotion to disease management.

Digital games offer a promising and untapped opportunity to leverage children's enthusiasm and to help transform learning in America. The analysis offered here results from reviewing the literature and interviewing experts in the nascent field of digital learning.

Health and education

America's global leadership position depends on preparing the country's workforce to compete and collaborate effectively in the future. Two essential, intertwined components of creating a productive workforce are children's health and education. In both areas, the country faces opportunity and risk.

American children today are increasingly unhealthy at earlier ages, because:

- Too many do not eat properly, do not exercise enough, and are overweight.
- Childhood obesity and diabetes are increasingly prevalent.
- Childhood obesity and diabetes can lead to adult disease.

Significantly, poor childhood health is associated with poor academic achievement. Various research studies have associated better health and physical fitness with children's performance in school. Some schools are experimenting with maintaining dentists and doctors on-site or nearby to treat students (e.g., New York City's Harlem Children's Health Project at Harlem Children's Zone; the Mississippi Children's Health Project in the Mississippi Delta region), and the results are promising.

Digital games show significant potential to promote children's growth and healthy development. They can foster skills and knowledge that help children with academic learning, as well as habits that contribute to better health. Various types of games for health include:

Games for physical health

- *Dance Dance Revolution*, a commercially developed game, gets children moving physically for hours at a time, and has been adopted by several states for their public school physical fitness programs.

Games for developing healthy long-term habits

- Sesame Street's *Color Me Hungry* game teaches the importance of "eating your colors" by choosing fruits and vegetables.

- *Germinator* teaches children about germs and the biological rationale behind good hygiene habits.

Games for disease management

- *The Asthma Files* helps children use fewer steroid treatments for asthma and miss fewer days of school.
- *Re-Mission* helps educate young cancer patients about their disease and results in their greater adherence to medication regimens.

Need for strategic investment

All groups committed to the public interest — educators, policymakers, the federal government, industry leaders, philanthropies, universities — should invest resources in learning how to maximize the impact of a potentially powerful phenomenon that can advance both children's learning and health.

Experts in the field of digital learning interviewed for this study concluded that digital games have strong potential: Kids love playing them, but the research has not fully demonstrated with precision why or how they work, as well as how to design them for specific learning goals. Until more is known, our nation cannot fully harness their benefits. The issues we need to address include:

- Deepening the knowledge base about the benefits and limitations of games for children's learning;
- Designing games that increase learning, whether about health, literacy, science, history, or problem-solving;
- Identifying what elements (i.e., which settings, program interventions, or types of adult guidance) make game-playing more effective;
- Determining how games can best be integrated into the classroom and other learning environments.

The universe of digital learning is too large and too multidisciplinary to fit into old models of research and development. Currently, investment in digital media is haphazard and unfocused.

We need to maximize the potential of games in a more strategic way. To do this, we should organize research and investment strategies to:

- Establish research priorities.
- Study or scale up innovation in this arena.
- Disseminate evidence of what works.

Recommendations

The Joan Ganz Cooney Center recommends five steps to jump-start a national “game-changing” action plan to address the country’s digital-age challenges in both health and education.

1. Implement R&D initiatives at federal and state levels

Research on digital media needs to be coordinated and collaborative throughout the country. We need to enable a research network across federal executive agencies to identify gaps and determine how practices from one content domain could be transferred to others.

In particular, we need better mechanisms to:

- Identify the learning gained through games and other digital media (e.g., R&D inventories).
- Develop rigorous design, practice, and performance metrics.
- Reach consensus and drive investment on high-priority research goals.

Leadership from government, industry, education, health, and philanthropy should:

- Convene regional summits, bringing together researchers, industry, philanthropy, and practitioners.
- Set priorities for research and development on digital media.
- Suggest allocations of new investments by the government and private sources.
- Invest in infrastructure that facilitates R&D collaboration. A promising initiative: National Public Lightpath proposes creating a national high-speed fiber-optic network to facilitate collaborations between researchers and organizations representing end-users.

The White House should lead the R&D effort by:

- Conducting an inventory to determine what research is being funded and by which agencies.
- Helping ensure interagency coordination of digital media activities and related research on learning by:
- Establishing a Subcommittee on Digital Media and Learning within the National Science and Technology Council (NSTC) under the Committee on Technology.

Federal research agencies should:

- Fund fellowships and model training programs to create a critical mass of scientists who specialize in games.
- Fund exploration of alternative assessment models that integrate digital learning approaches to high-priority needs (e.g., literacy, science, and math achievement gaps).
- Prepare a new meta-analysis of existing research on the positive impacts of games and other digital media on children’s health and learning, leading to recommendations for further research.
- Establish a national “best practices” initiative to disseminate effective uses of games technologies for education and healthy development.

2. Create innovative partnerships

We need to establish innovative methods to fund and stimulate creative networks of partners with different areas of expertise. The federal government and philanthropies should provide incentives to create new types of partnerships. Possible models include:

- The public-private partnerships that the Department of Defense has forged with technology partners and game developers;
- The National Center for Research in Advanced Information and Digital Technologies, a nonprofit corporation organized within the Department of Education;
- Multi-stakeholder partnerships between game makers, foundation-supported nonprofits, and government funding;
- “Double-bottom-line” companies that seek both social impact and return on capital investment.

3. Support adult guidance for children's digital activities

Even more important than the advances of technology itself (the hardware and software) is the human infrastructure needed to make new technology useful for children's learning.

Children need adult support

- Adults can offer the context, perspective, and encouragement that children lack and need.
- Teachers, parents, health professionals, and afterschool providers should be trained to use and understand the benefits and limitations of digital games.

Training for adults should include:

- Outreach to parents to make research understandable;
- Professional development for teachers on how to integrate games into curriculum;
- New protocols for community health providers to promote children's "healthy habits."

The country should create a "digital teacher corps" modeled on initiatives such as Teach for America. The goals would be to:

- Build professional capacity.
- Enable educators to help students learn to transform information into knowledge used for discovery and problem-solving.
- Engage students in an environment that teaches skills, content, and new ways of thinking.

4. Modernize public media

Educational television media for young children have a strong track record of enhancing basic skills (basic reading and math) as well as more complex skills (social, emotional, and problem-solving) for all children, but especially for those from underserved communities.

These television-based efforts should now be modernized to accommodate the needs and interests of children living in a digital age as well as to leverage the hundreds of millions of dollars of previous public investment in educational programming for children.

Educational media companies should:

- Expand current experimentation with new formats (such as games and mobile learning) to teach children both traditional literacy and new 21st-century skills.
- Create new business models and incentives to ensure the wide distribution of media to schools and other learning centers.

5. Initiate a broad public dialogue about digital media and games

Public dialogue on children's digital games often focuses on violence, sexual content, inappropriate language, and safety. We need to engage the public on the potential benefits of digital media.

Engagement efforts might include:

- Creating and publishing parent guides to digital media in magazines and newspapers;
- Holding "town hall meetings" and "summits" for parents and the general public;
- Expanding media literacy curricula in schools.

Conclusion

Digital games are here to stay and offer the country a rare opportunity to leverage children's already established enthusiasm in order to reform education and promote healthy development. We know enough about digital games and how they work to recognize their promise. Now we need to invest time and resources to turn this promise into a real "game changer" for America's children.

About the authors:

Ann My Thai

Ann My Thai leads strategic partnership efforts with high-tech and gaming industries as the Assistant Director of the Cooney Center. Before joining the Center, she served as a consultant for Education for Development, Vietnam, an organization that develops educational programming for disadvantaged children. She went on to coordinate voting rights and education reform efforts at the NAACP Legal & Educational Defense Fund. She also worked for Apple developing marketing strategies for professional software applications. Ms. Thai received her bachelor's degree in Political Science from Yale University and an MBA from the Ross School of Business at the University of Michigan.

David M. Lowenstein

David M. Lowenstein is a leader in civil rights and digital-media innovation. As a recent National Urban Fellow with the Cooney Center, he helped drive policy, public engagement, and fundraising efforts. Mr. Lowenstein is currently a producer with E-Line Ventures on the development of a social-impact video game supported by the MacArthur Foundation. Previously, he served as Managing Director for the Minority Media & Telecommunications Council, where he directed all financial, staffing, programming, and fundraising activities, and also served as Manager of the National Urban League's Technology Programs and Policy Department. He holds a master's in Public Administration from Baruch College's School of Public Affairs.

Dixie Ching

Dixie Ching manages the Center's research and publication activities, as well as the Cooney Center Fellows program. Her research at UC Berkeley and the National Institutes of Health has resulted in publications in the Journal of Biological Chemistry. Ms. Ching has also worked in the field of documentary television, helping to produce shows for the Discovery Channel and PBS; in 2001 she created an English-instructional series for Beijing Television. Before coming to the Center, Ms. Ching was a researcher at EDC's Center for Children and Technology. Ms. Ching holds a bachelor's degree in Cell and Developmental Biology from UC Berkeley and a master's degree in Science Journalism from Boston University.

David Rejeski

David Rejeski works at the Woodrow Wilson International Center for Scholars, a nonpartisan policy research institute in Washington, D.C., where he directs the Foresight and Governance Project and the Serious Games Initiative. Recently, he was a Visiting Fellow at Yale University's School of Forestry and Environmental Studies. He has worked for the White House Council on Environmental Quality and the White House Office of Science and Technology on a variety of technology and R&D issues. He has graduate degrees in public administration and environmental design from Harvard and Yale.

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One Lincoln Plaza
New York, NY 10023
p: (212) 595-3456 f: (212) 875-7308
cooney.center@sesameworkshop.org
www.joanganzcooneycenter.org

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