

## CHILDREN AND THE INTERNET

*Summarized from an Interview with Dr. Zheng Yan<sup>1</sup>*

In an interview with Virginia Department of Education staff, Dr. Zheng Yan discussed the Internet's impact on children from a developmental psychology perspective. His insights are particularly significant since research in this area generally is limited or lacking.

Dr. Yan has observed that an effective Internet safety program must explain how the Internet works. Students should understand the Internet's potential as a powerful learning tool and realize why certain activities can be unsafe. They need to develop a good *immune system* through gradual exposure to the unfiltered Internet. Meanwhile, parents and teachers must help children learn appropriate responses to potentially harmful online experiences.

### *Children and the Internet*

Young children tend to view the Internet simply as what they see immediately before them—a Web interface or browser icon. As children age, they gradually develop a more comprehensive concept of the Internet; however, few students of any age view it as a complex network of networks. They need to realize that the Internet comprises millions of interlinked computers. This level of comprehension would help them better understand certain online social interactions, such as how e-mail can be read by people they do not know and why unknown people can send them sexually inappropriate material.

Researchers and educators should be proactive, learn from one another, and generate good solutions. This is where an *adaptive scaffolding* can be effective. The scaffolding needs to be adjusted continually to meet individual needs, which vary based on children's physical, social, and cognitive stages as well as personalities. This concept affects the development of school Internet safety policies since different types of students at different ages require different types of rules and restrictions.

Generally, a three-year-old child will accept the commands *do* and *don't* with regard to the computer. However, a 16 year old will need to know *why*. Although this teenager is only 13 years older than the younger child, his physical, cognitive, and social growth has been dramatic. In addition, many teenagers are often more technologically advanced than adults. So, just telling a

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teenager not to visit a particular Web site is not enough. This more sophisticated understanding of the Internet also can help protect teenagers.

## **The Internet's Effect on Children**

Many studies have examined the effects of various media on children's behavior, especially with regard to sexuality or aggression. While these studies may inform new research, they also may be a hindrance. As much as the Internet is associated with computers or televisions, they are not the same. Research on other media may not be completely applicable to the Internet's effect on children.

The Internet features two main components that do not occur together in any other media: technical complexity (not found in television) and social complexity (not found on a computer). These aspects must be considered when studying how the Internet affects children.

The popular use of analogies typically ignores the Internet's complexities and detracts from understanding real safety issues. One common analogy compares Internet use to driving a car on the highway. This is misleading. A highway is visible, whereas the Internet is invisible—a virtual world. Although driving involves a certain degree of personal interaction, the main focus is on driving the car. The focal point of the Internet is interacting with other people, even when they are unaware of these interactions—like when predators secretly view communications. This kind of social complexity has never existed before. People who use simple analogies, like driving a car on a highway, substantially underestimate the Internet's potential dangers.

Related to this issue is a popular perception about the various media. With television, the public tends to worry about aggression and violence; however, for the Internet, people generally are more concerned about sexual or pornographic material. These perceptions also may be misleading.

With other media, especially television, children are exposed to a lot of advertising. Media educators have worked very hard to ensure that students understand the persuasive aspects of advertising; however, one Internet marketing component is not available on television: the power to make purchases on demand at any time. This issue relates to the persuasive aspects of the media and, more importantly, to becoming a good economic citizen in the e-commerce

world. As e-buying becomes more widespread, its impact will grow substantially. Parents need to teach their children about Internet economics and responsible buying habits.

## **Social Digital Divide and Virtual Immune System**

The *digital divide* traditionally refers to disadvantages poor students face in terms of buying computers and accessing the Internet; however, a *social digital divide* also has emerged. Likewise, it tends to affect poor students who do not have computers or Internet access at home. Their only opportunity is to use the Internet at school. Due to school Internet filters, these students develop an unrealistically high comfort level online. They eventually will encounter the true Internet and likely be unprepared for the sexuality, commercialization, and additional problems it offers. On the other hand, students with home computers will form a more accurate picture of the Internet and be better prepared to identify potential issues. Therefore, the digital divide is actually social inequality.

Children need to build virtual immune systems just as they do physical immunity. If children are raised in a germ-free environment to prevent illnesses, their immune systems are too low to block diseases when they encounter the real world. Similarly, students who fall on the poor side of the social digital divide will be unprepared for real Internet and virus threats. When children advance physically, cognitively, and socially, they need a scaffolding to wean them off the totally filtered Internet and on to a partially real Internet. They then will enter the real world with stronger virtual immune systems.

## **The Internet's Impact on Learning**

Research about the Internet generally has focused on social effects, such as psychological well-being; for instance, children are more likely to use the Internet when they feel lonely. A study by Michigan State University has found that the Internet has had a positive effect on reading but not mathematics. One explanation is the Internet is a text-rich environment with fewer opportunities to foster mathematics or science skills; however, both the Internet and children are changing. Students increasingly use visualization, which can relate to mathematics and science as much as creative writing.

The Internet can facilitate a game-like learning environment, which is highly motivating and interesting to students. Unlike in traditional classrooms, students do not sit across from the teacher, hold a textbook, and take a final exam. Instead, they can explore new information on the Internet—like a game—combining both the learning journey and entertainment. More research is needed in this area as additional online games are built specifically for history, mathematics, and science. Gaming has the potential to have a different kind of cognitive impact than traditional learning.

## **Social Networking**

For the first time in history, children can create mass media—as opposed to being only consumers. Many students are creating substantial Web sites. This phenomenon presents unprecedented opportunities and challenges. On the opportunity side, MySpace.com and similar sites give children tremendous outlets for expressing their true selves.

A challenge related to online social networking is the anonymity of the Internet, which is different from traditional forms of communication, such as letters or television. Children often do not know the identities of their communication partners, even when they think they do. For educators and parents, this is like fighting an invisible enemy.

Although computer crimes experts will track down some of the problems, the solution ultimately is in the hands of the children. In the Internet era, children must develop an ability to recognize and confront online problems. The challenge is to help protect themselves from social dangers while maximizing the potential positive effects of these sites.

Filtering or blocking everything associated with MySpace.com would not be the best option. To be safe, students need to understand why they should not do certain things. If educators and parents can foster this type of competence, children can become the heroes, rather than the defeated, of the Internet age.

## **Bullying**

One question related to this issue is whether real-life bullying causes electronic bullying or does electronic bullying enhance real-life bullying. This is a complicated research question and has yet to be explored fully. One study focuses on the direction of

electronic bullying; for instance, do bullies move from real-life bullying to electronic bullying or vice versa? Another focuses on differences between real-life bullies and victims and electronic bullies and victims. Preliminary results indicate that electronic victims tend to be real-life victims of bullies.

More research is needed to determine if this is a two-world issue, meaning that students may act differently in real life than they do on the Internet. It is too early to tell whether current educational programs that address real-life bullying are effective when applied to electronic bullying.

## **The Role of Parents**

A doctor cannot diagnose a problem without talking to the patient; likewise, children and parents must feel comfortable discussing Internet problems. Parents need to encourage children to report whatever happens on the Internet. Research has shown that about 25 percent of children do not report inappropriate Internet experiences. The explanations for this vary. Many children are too scared, ashamed, or shocked to tell. Parents must build a level of trust that encourages their children to report fears of any kind.

Another issue is that some parents have misconceptions about the Internet. The problem is not that these parents do not have online experience; rather, they might lack correct or complete information since the Internet is an emerging and complex concept. As a result, some parents blame their children for inappropriate Internet use; others largely ignore the Internet safety problem entirely. To help ensure children's safety, parents need to understand how the Internet functions, how to diagnose a potential problem, and how to treat the situation.

Additionally, parents should not blame themselves when their children encounter problems online. The Internet is a new phenomenon that has been used pervasively only the last 15 years; consequently, children and adults often are at the same starting point of learning. Parents should not pretend to be experts. Get some advice from Internet safety experts in state or local law enforcement departments or computer crime units. They address these kinds of issues every day.

## The Role of Teachers

Using the doctor analogy again, one must identify the symptoms before writing a prescription. The first step for teachers is to ascertain the students' existing knowledge about the Internet. Remember that students are part of the solution. They can help teachers learn what will and what will not work. For example, a fun role-play situation can reveal what students know about Internet safety. Always try to learn from students before teaching them.

The sharing must be two sided, especially with older students. While pointing out prohibited sites and activities, educators should help students understand

the rationale. For instance, explain *why* they might use their first names on a social networking site but not their last names. This improves the quality and effectiveness of Internet education.

Ultimately, Internet safety is a collective problem that requires a collective solution, with equal input from parents, teachers, and children.

<sup>1</sup> Dr. Zheng Yan is an assistant professor with the University of Albany, School of Education. He teaches child development, the psychology of teaching and learning math, science and technology, and applied research methodology. He has linked his research on Internet use with studies on child development. In particular, he has been examining how well K-12 and college students understand the Internet, technically and socially, and what factors affect their knowledge.

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## Recommended Reading

1. Thornburgh, D., & Lin, H. S. (Eds.). (2002). *Youth, pornography, and the Internet*. Washington, DC: National Academic Press. While the body of empirical literature grows rapidly, this currently is the most comprehensive book on Internet safety.
2. Wartella, E. A., Vandewater, E. A., & Rideout, V. J. (2005). Introduction: Electronic media use in the lives of infants, toddlers, and preschoolers. *American Behavioral Scientist*, 48, 501-504. <http://abs.sagepub.com/cgi/reprint/48/5/501> (18 March 2007). Wartella, Vandewater, and Rideout's research is the best regarding very young Internet users.
3. McKenna, K. Y. A., & Bargh, J. A. (2000). Plan 9 from cyberspace: The implications of the Internet for personality and social psychology. *Personality and Social Psychology Bulletin*, 4, 57-75. McKenna is among the finest in studying the Internet's social effects on children.
4. Greenfield, P. M. (2004). Inadvertent exposure to pornography on the Internet: Implications of peer-to-peer file-sharing networks for child development and families. *Applied Developmental Psychology*, 25, 741-750. <http://www.cdmc.ucla.edu/downloads/Inadvertent%20exposure.pdf> (18 March 2007). Based on Greenfield's testimony before Congress, this article is one of the finest reviews of Internet pornography issues.
5. Gross, E. F. (2004). Adolescent Internet use: What we expect, what teens report. *Applied Developmental Psychology*, 25, 633-649. <http://www.cdmc.ucla.edu/downloads/Adolescent%20Internet%20usepdf.pdf> (18 March 2007). This is a good empirical study on adolescent Internet use.
6. Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53, 1017-1031. <http://www.cs.cmu.edu/~kraut/RKraut.site.files/articles/kraut98-InternetParadox.pdf> (18 March 2007). This article marked a milestone in Internet safety research. It remains the most cited work on the relationship between the Internet and children's mental well-being.
7. Mitchell, K., Finkelhor, D., & Wolak, J. (2001). Risk factors for and impact of online sexual solicitation of youth. *The Journal of the American Medical Association*, 285, 3011-3014. <http://www.unh.edu/ccrc/pdf/cv42jama.pdf> (18 March 2007). This article is one of a series of studies by the pioneer researchers on Internet risk and children.
8. Huffaker, D. A., & Calvert, S. L. (2005). Gender, identity, and language use in teenage blogs. *Journal of Computer-Mediated Communication*, 10, article 1. <http://jcmc.indiana.edu/vol10/issue2/huffaker.html> (18 March 2007). Huffaker and Calvert's article marked one of the first studies on blogs.
9. The following articles from *Developmental Psychology* represent some of the initial studies regarding Internet use and academic achievement, self-injury, and the correlation between Internet safety and children's perceptions of the Internet:
  - Jackson, L. A., von Eye, A., Biocca, F. A., Barbatsis, G., Zhao, Y., & Fitzgerald, H. E. (2006). Does home Internet use influence the academic performance of low-income children? *Developmental Psychology*, 42, 429-435. <http://www.apa.org/releases/dev423-jackson.pdf> (18 March 2007).
  - Whitlock, J. L., Powers, J. L., & Eckenrode, J. (2006). The virtual cutting edge: The Internet and adolescent self-injury. *Developmental Psychology* 42, 407-417. <http://www.apa.org/releases/dev423-whitlock.pdf> (18 March 2007).
  - Yan, Z. (2006). What influences children's and adolescents' understanding of the complexity of the Internet? *Developmental Psychology* 42, 418-428. <http://www.apa.org/releases/dev423-yan.pdf> (18 March 2007).
10. Fleming, M. J., Greentree, S., Cocotti-Muller, D., Elias, K. A., & Morrison, S. (2006). Safety in cyberspace: Adolescents' safety and exposure online. *Youth & Society*, 38, 135-154. In this study, Australian teenagers reported varying degrees of inappropriate Internet use depending on age, gender, and parental counseling.

