appendix e: workshop participant mini-papers

In advance of the workshop, seven experts on learning and/or play wrote mini-papers addressing key issues in family use of video games and digital media, global differences in technology access and video game usage, and marketing and financial sustainability considerations.

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Intergenerational Gaming Contexts in Emerging Economies
Richard Beckwith, Research Psychologist, Intel

This paper is intended to address significant issues in emerging economies that will apply to an intergenerational game to support literacy development. The paper will cover technical infrastructures and the home lives of some typical families in these areas. The technical and social infrastructures in many emerging economies can be quite different from those in the developed world. The presence of existing devices or even electricity in the home is obviously important but there are also policy issues to consider as well as various forms of shared access. Similarly, there are aspects of life to consider about the home beyond the domestic technologies, including the reasons people have for adopting technologies and even the educational levels of familial elders. Finally, the paper will summarize some of these ideas around three gaming platforms: consoles, mobile phones, and PCs.

The gaming ecosystem
When we plan for educational technologies we must, of course, be sensitive to the ecosystem in which the application will be released. Many of the issues are well known, at least those issues as they apply to the context of avid video gamers in the developed world. We can look, for example, to US junior high students and their family and school lives. However, if we intend to move beyond this ecosystem and work more broadly in the world, we can't focus only on this well-known ecosystem. We have to look beyond our own ecosystem but first we should consider it.

Existing gaming platforms. Video gaming is an international phenomenon with nearly a billion game platforms used. Consulting firm Future-Source estimates that there are circa 400 million game-oriented devices (consoles plus handhelds) worldwide. Nintendo, Microsoft, and Sony are all major players in the console world, each with over 100 million consoles being used. Handheld gaming, both on devices like Nintendo's DS and mobile phones, especially the iPhone, is also widespread. Finally, perhaps the most common platform for gaming is the PC, with nearly 300 million gamers. And games played on these platforms are not simply stand-alone games. More than half of current generation gaming consoles are connected to the internet; mobile phones are increasingly connected; and PC gamers are, likewise, often connected to the internet.

Why game? Why do people play video games? We know some things about games in the developed world. For example, many adults play games to kill time. They are waiting for something to happen so they play a short format game. It's not so different from a crossword puzzle that someone might pull out. Youth are different though. They often play games because their friends play them and they are playing for social status. Games have been called the great equalizer (Rushkoff, 1999). They are what allows a 12-year-old to practice a game at home and go out and compete against a 15-year-old in the same social group. Game expertise is serious social capital in some worlds. Games are aspirational with youth. Often they aspire to compete with and be accepted by higher status peers.

What games? Not surprisingly, a large number of young people play games. School age children are likely to choose games based on what is popular with their peers and often characters from popular media populate these games. Things are different for the older generations. While it isn't clear exactly how to decide on the definition of the older generation for an intergenerational game, according to Parks Associates about 40% of US adults from 18-64 play a PC game weekly. Now, this isn't just the power gamers or social gamers who Parks say trend toward younger males playing on the PS3. That 40% number includes everyone. The Wii folk trend more female and older and are more likely to enjoy puzzles and word games on their console. It's important to note that consoles are
not just for gaming anymore. The 400 million users worldwide include 300 million or so users of consoles. The most recent generation of platforms (the so called “seventh generation”) allows users to download games and videos, listen to music and watch DVDs, view photos, and perhaps most surprisingly, surf the web.

Beyond our ecosystem
These worldwide numbers suggest gaming technology that is distributed internationally and, obviously, there is an internationally distributed play space. It’s just not evenly distributed. The bulk of gamers in these numbers are in the US, the EU, and Japan. Interestingly, while this may sound wide ranging, the ecosystems are remarkably similar. The people that comprise the top of the pyramid are surprisingly similar, independent of where they are (Mainwaring, Anderson, & Chang, 2005). People in Tokyo live like those in London or New York – even the richer people in, say, Shanghai, live quite a lot like those in US or EU cities. We should make no mistake: the billion or so gaming platforms in use today are primarily used by the billion people who live at the top of the pyramid and, interestingly, most of these people live similar lives.

Little modification of a game is necessary for it to appeal to those at the top of the pyramid, in fact, some games don’t require much more than translation of minimal text. While little modification may be required, careful planning is a good idea. For example, before one goes into the People’s Republic of China (PRC), it would be good to keep in mind some aspects of Chinese gaming. Many people are aware that computer games are quite popular in China. The western news reports phenomena such as Chinese gaming in internet cafes for the after work crowd or “gold farming” (Lindtner, Mainwaring, & Wang, 2008). “Gold farmers” are people who play games like World of Warcraft to earn items like weapons, which can be sold. It is a job some choose. Despite the popularity of games in China, most gamers play PC games. This is because within the PRC, gaming consoles, with the exception of the home grown iQue, are illegal. The iQue is a joint venture with Nintendo and it will play modified PS2 games. For handheld platforms, there is a provision that allows for the sale of the Nintendo’s DS and games on phones are legal. So, there is a potential for playing console and handheld gaming but policy puts restrictions on that market. Many people play games on PCs both at home and in public internet cafe where many PCs are installed for gaming.

But we don’t need to travel so far to ask about constraints on gaming infrastructure. In recent work on Chicago’s West Side, we encountered some interesting phenomena that impacts gaming at home. The community where we were working was bringing in free wireless internet service for residents (Beckwith & Boaity, 2004; Center for Neighborhood Technology, n.d.). We were interested in seeing how that would work. Most people in this community felt that they didn’t have the time or need to bother with free internet access. Many who did, however, were parents of school-age children. They wanted the internet and computers at home not only because they wanted to access to the internet for content reasons (e.g., for homework help) but also because they felt that having a computer in the home would help keep their children safely indoors. Kyle, for example, was a single dad living with some relatives on a block around the corner from an area active in the drive-up drug trade. Because of that, his 11-year-old daughter was only allowed to ride her bike as far as the corner at the end of the block in one direction and an alley going the other way. She didn’t like riding in such a restricted circuit. The local library, which included a computer center, was too dangerous for his daughter to walk to. Kyle had purchased an older computer and dial up access for his daughter before the free wireless came to their community. He bought it so that his daughter would stay inside. He was pleased to tell us that she did use the computer frequently, often for games, and her friends would come over and safely play. Our colleagues have witnessed nearly identical circumstances in a poor community in Sao Paulo,
Brazil where a mother purchased a game console to keep her children indoors. It may be worth noting here that Brazil is the only country where indigenous gaming platforms are common. These do not play native games, however. These consoles play games written for the established platforms, even playing games written for multiple other platforms (e.g., the Polystation). Also in Brazil, we see the Zeebo. The Zeebo is a new gaming platform that has been designed for emerging economies. It will download games using 3G (to get around pirating problems) and is primarily an “intro” platform. Much like the Wii, it is not intended for advanced gaming.

In some ways, poverty is not a long tail phenomenon. That is, unique conditions do not adhere, at least as far as the concerns for an intergenerational game go. People living in poverty often live quite differently from the global rich but at the same time, they live in ways quite similar to each other. They tend to have several sources of income. When the development community talks about small holder farmers, they say they are “pluriactive,” meaning that these farmers have several sources of income. They farm but they may also do day labor or work in a trade, such as electrical work, within their community. In urban poverty we are more likely to call them “hustlers” who try to figure out how to take available resources and use them to put food on their families’ tables. They may find a niche selling batteries or repackaged snacks on the road to drivers. They may do hair or nails or fix cars in the alley. In any case, they don’t have a single job with regular hours. They may have the luxury of picking and choosing when they will work or may have to try to work whenever possible but they are not working 9 to 5 at a consistent location with weekends off. This means that elders may be more likely to be available to students for cotemporaneous play.

In rural China, we spent the day with a young farmer, Heshen, and his family (Beckwith & Boaitez, 2004). The family were a minority (Manchurian) and so were allowed two children. They had a school age girl and preschool boy. All homes in the village have electricity, a legacy of Mao’s time when he decreed that every home should have power and a radio so that they could listen to messages from the government. Many homes had TVs and disk players for videos (either DVD or VCD, a Chinese standard). Mobile telephony is also becoming common. Heshen’s family lived in a two-room home with the two parents, two children, and a grandfather. They had a television and the father had a mobile phone so that he could hear about any available jobs. Heshen also owned a small three-wheeled truck that he could use to purchase corn from his neighbors to sell to wholesalers in a nearby city. The family had a problem coming up in the next school year. Their village school was about to close. The Chinese government wanted all small schools to close and, if there were not enough students locally for a big school, all students would go to a regional boarding school. This local school in this village was not big enough and there were not enough children in the pipeline to justify keeping the school open. This wasn’t all bad. In the regional school, the students would have access to better resources, for example, the new school would have a state of the art computer lab. However, Heshen told us, “When all the children leave, everyone cries.” With their flexible schedules, this family could find time to interact remotely with their daughter in her new school (and son when he goes). Some kind of connection would be more than welcome. With China’s adult literacy rate of over 90%, it is easy to imagine parents co-gaming with their children to improve their educational experience.

Things are not always so conducive to a gaming connection. The global poor tend to live in communities with low levels of infrastructure. Whether in the inner cities of the developed world or rural areas in the developing world, the likelihood of easy access to the internet is low. In these communities, easy access to even water is often a problem. It should go without saying, then, that many people in these communities are
not likely to be able to afford special purpose consumer presence equipment and they certainly cannot afford the latest consoles.

In a small village in India, we saw precious little technology in homes. People would often begin telling us about their home by listing the construction material (especially if they had corrugated metal roofing) and the number of light bulbs that they had. These bulbs were often attached to bare wires hanging from the ceiling. There were only two computers in the village with internet access and only a handful of other computers, mostly just in the local school. Schools had a hard and fast schedule but, as in China, many of the parents worked when they could. They would check each day to see if there was work and often, especially for the men, they found there was no work in the village. They could go into town to see about day labor at an informal job site. While we were there, the new computer lab in the local school was full of boxes of new televisions which were part of a government scheme to get a television for every household. They were to be distributed for free to the citizens of the village. This certainly leaves room for game consoles. In India, the PS2 is the most common game console, and games are marketed to parents as being good for their children. In a context such as this, games can be seen as aspirational in a different way. Rather than children aspiring to be like older children, families aspire toward more “developed” status. Having and using the gaming console is seen as something very modern. There is a potential problem in India. India’s adult literacy rate is about 66% and so, unlike China, it is hard to see every parent being able to work as a teacher with their children on literacy issues. However, that is only if we see this as a one-way street. It is certainly the case that students could help their parents to learn to read. Peer-teaching is a well known method for advancing both the more and less able student (Whitman, 1988). Teaching one’s parent to read would almost certainly improve one’s own reading.

Summary
Given what we know about the people and infrastructure in these communities, we can say something about the potential for intergenerational gaming in these contexts.

Mobile games. Mobile phones are perhaps the most likely common gaming platforms. Mobile telephony is used widely in emerging economies, resulting in the commonly referred to “leapfrogging” of the telecommunication infrastructure in these nations. That is, the telephony infrastructure tends to be quite ubiquitous, even more so than in developed nations like the US. However, it is important to note that interactions with a phone tend to be short periods of engagement and are typically low in text. Mobile telephones are often one user devices with a small enough screen that simultaneous use by two persons is difficult. Texting, however, is quite common and games based on a texting user experience could find a place.

PC games. PCs are becoming more affordable (consider, for example, the “hundred dollar laptop”), and telecommunications infrastructure is becoming more amenable to computer connections. As this occurs, PCs, already the most common gaming platform in the developed nations, may become more significant in the developing world. PCs do afford multiple players and a rich visual interface. Currently, few of the underclasses have PCs but this could change as more governments develop policies to bring in computing.

Consoles. Consoles are in many ways the most likely gaming platform in emerging nations. Because they can attach to a TV, the display device is already in many of the households where the game would be used. The space required to add a console is not great, and consoles themselves can be quite cheap. Consoles provide a rich experience to users and can be used for many other things aside from game playing including watching movies and browsing the internet. The iQue and Zeebo are examples of
consoles developed for emerging economies. Both are designed to deter the use of black market game software as unlicensed software is a problem for many of the game manufacturers, who make most of their money on games and not the consoles. However, even these consoles can be prohibitively expensive for consumers not to mention the added cost of having to buy licensed software.

Parents/Family
Parental roles often manifest in different ways in the developing world. In many cases, parents will buy devices to keep their children around the home. Often financial and space constraints will play a stronger role. Less expensive devices that take up less room will be most attractive, giving gaming consoles an advantage. We also know that PCs, as a multifunction devices, also have some advantages. For example, reasonable or not, parents often associate PCs with more advanced livelihoods and will bring one into the home for their child. One of the aspects of intergenerational gaming that must be addressed is which elders would be in the interaction. One difference between the developed and the developing world is that we may need to consider whether the adult is literate or not. 75% of illiterate adults live in eight large countries, including several countries referred to above – India, China, and Brazil. And it’s not as though we can always recruit another adult. In many developing world cultures, literacy skills are low in elders and youth are often reticent to speak with nonfamily elders at all (Giles, Dailey, & Jayashree, 2007). Still, this does not mean that using the same application to have a youth teaching a familial elder to read wouldn’t work. In fact, it may allow us to address two problems at once.

Conclusion
The developing world presents interesting opportunities for an intergenerational gaming application for teaching literacy. With Millennium Development Goals around education in jeopardy for everywhere except Europe, North Africa, and South Asia (Millennium Development Goals Report, 2009), the timing couldn’t be better. However, issues around the technical and social infrastructures mean that one must plan carefully to address these very real problems in this setting. Developers must take care to ensure not only that families can afford the devices and software but also that the target platforms can be used in that region and that internet access, if necessary, is a possibility. Developers would do well to address the student’s motivation to use the application. Will they get bragging rights if they excel? Finally, they must consider whether the elder in the multigenerational partnership could also use the scaffolding to enhance the learning of literacy. Well designed, one can imagine that building in a peer teaching component could make this a very powerful tool in some contexts.
Contributing Factors to Video Game Learning Among Children: Lessons from the US and China
Fran C. Blumberg, Fordham University

The intergenerational appeal of video game play is apparent in national surveys indicating that over 50% of individuals ages 2-17 had played with a game console in 2007 (Nielsen Media Research, 2007). The Entertainment Software Association (2009) also has reported that 68% of US households play video games and 63% of parents thought video games were positive influences in their children’s lives. Statistics attesting to the extent to which parents and children play video games together are less readily accessible and pose a challenge for educators, researchers, game designers, and interested constituencies who seek to involve the family in game play. From a social standpoint, such collaborative efforts may provide a potentially enjoyable venue for interaction. From an educational standpoint, family play may provide an opportunity for informal digital and media instruction (Aarsand, 2007), similar to the opportunity presented when a family engages in co-viewing of television programs (Warren, 2005). However, questions concern the extent to which video games can be developed that will appeal to the differential ages represented in families and sustain their interest and motivation sufficiently to create a mutually beneficial interaction. These questions loom large particularly in the case of educational games, which are often seen as unappealing to child and adolescent audiences (see Tüzün, 2007; Van Eck, 2006). Similarly, specific guidelines for development of games that facilitate transfer of learning and sustained play has remained a holy grail of sorts and recent fodder for grant competitions within the private (e.g. Robert Wood Johnson Foundation, MacArthur Foundation) and public (e.g. National Science Foundation) sectors.

Contributors to video game appeal: Spotlight on developmental appropriateness

In general, the factors that have been long noted as contributing to digital game appeal are challenge, curiosity, fantasy, and control. These factors emerged from seminal work by Malone and colleagues (Malone, 1981; Malone & Lepper, 1987) who sought to identify intrinsically motivating properties of games for learning. Challenge was characterized as referring to goal-based activities in which the possibility of successful completion was uncertain, but not perceived by players as beyond their reach. Challenge also was seen as contingent on the feedback provided to players about the success (or failure) of their progress toward reaching their goals for game play. This feedback was thought to then influence players’ self-esteem. Curiosity was construed as similar to challenge albeit without influencing the player’s self-esteem. Fantasy was cited as an individual’s perception of actions or social situations specific to the environment created through the game only. Finally, control was noted as one’s perceived ability to master actions and events that occurred within the game environment.

Presumably, the games that are played most frequently are those that present different-aged players with optimal levels of challenge, curiosity, fantasy, or control, as exemplified in online adventure games or game console sports games. Ultimately, these factors have been seen as contributing to “fun” experiences. Traditionally, fun experiences have been seen as precursors, or at minimum, facilitators of efficient learning. However, the findings from recent research indicate that enjoyable media-based learning experiences may not facilitate better learning than experiences seen as less enjoyable (see Hapgood, Ainsworth, & Benford, 2005; Gabrelian, Blumberg, & Hogan, 2009). Similarly, Blumberg (1998; 2000) found that elementary school-age children who reported that their goal for playing a video game was to enjoy it showed poorer attention to game cues while playing than their counterparts who were more concerned with
acquiring strategies to master the game. Findings among adult game players also suggested that their liking of a particular video game was independent of their ability to become engaged in it over the course of playing it (Blumberg, Rosenthal, & Randall, 2008).

Clearly, children’s liking for a given game and its perceived “fun factor” may be less salient than has been long believed by educators. However, less arguable is that an effective game, and one likely to promote learning, is one that engages the player. A critical, though seldom considered, factor that serves to engage the child is that of developmental appropriateness. This factor has consistently been the focus of research examining children’s responses to educational and leisure-based television programming. For example, the comprehensibility of the content presented is typically correlated with what children retain and learn from that content (see Valkenburg & Cantor, 2000; Fisch, 2004). Similarly, children of different ages respond differentially to the perceptual features accompanying the content. Thus, preschool-age television viewers are more likely than primary school-age viewers to learn educational content associated with attractive qualities such as fast pacing and animation (Calvert, 1999; Calvert, Huston, Watkins & Wright, 1982).

Unlike the watching of television, however, the playing of digital games is interactive and offers an opportunity to master the intricacies of a complex, multi-cued, rule-governed environment. Thus, the game experience affords a level of control not available through more passive forms of media such as television. This control may be reflected in the level of developmental tasks presented to children in the context of a given game (von Salisch, Oppl, & Kristen, 2006). Developmental tasks, as defined by Havighurst (1953), are age-graded milestones such as writing one’s name during as a preschooler or riding a bicycle without training wheels as a second-grader. Thus, children’s attraction to a specific game may be motivated by the developmental appropriateness of the cognitive or physical skills promoted through the playing of that game. Among adolescents and adults, these skills have been cited as the refinement of spatial skills (De Lisi & Wolford, 2002; Greenfield, Brannon, & Lohr, 1994; Subrahmanyam & Greenfield, 1996), problem solving and inductive reasoning (Greenfield, 1985; Greenfield, Camaioni, & Ercolani, 1994; Rosas et al., 2003), and visual attention (Castel, Pratt, & Drummond, 2005; Green & Bevalier, 2003, 2006).

To date, little is known about the cognitive and physical skills promoted through game play among pre-adolescent children and younger. However, as argued above, the developmental appropriateness of a game may readily influence the extent to which it engages its players. Two variables that may contribute to this quality are that of formal features and interactivity.

**Formal features.** According to Wright and Huston (1983) and Calvert (1999), formal features refer to the auditory and visual production and editing techniques used in television, including action and pace, sound effects, narration, pans, and zooms. Formal features effectively draw children’s attention to the information needed to comprehend relevant televised content and provide the child with a developmentally appropriate mode of representation, either visual or verbal, with which to encode that content (Calvert, 1999).

These features are typically used to mark content that is child-relevant and ultimately appealing. These markers include female voices, child dialogue, non-human voices, animation, and music (Wright & Huston, 1983). Adult-relevant content (that is presumably incomprehensible for preschool and early elementary school-age children) may be marked by male voices, adult dialogue, and narration (Bickham et al., 2001; Huston & Wright, 1998; Valkenburg & Cantor, 2000). According to Valkenburg and Janssen (1999), children’s choice of television programs to watch may reflect the comprehensibility of those
programs, which in turn, may be flagged by formal features appropriate to the developmental level of the child. For example, elementary school viewers are inclined to learn content associated with features such as character dialogue or narration portrayed without moderate or rapid action (Calvert, 1999). During middle childhood, viewers also may appreciate more fast-paced, adventurous programs than preschoolers who appear to enjoy slow-paced programs that often repeat presentation of content (Fisch, 2004; Valkenberg & Cantor, 2000).

Formal features, or the “grammar of television content” (Calvert, 1999, p.455), may be analogous to the “language of digital games” (Prensky, 2001, p. 5-29). The latter may include the production techniques or game devices that promote comprehension of the story line as in the case of a back-story (e.g. short video sequence to open the game) or cut scenes (i.e. brief bits of narrative that prepare players for a successive level of the game) as often used in adventure games (see Dickey, 2006). According to Prensky, electronic game language often entails shared understanding among players that specific types of game design elements should be clicked on or that codes or “cheats” are commonly embedded in the game to expedite game progress, and that the game may contain surprise elements, or “Easter Eggs.” DiPietro, Ferdig, Boyer, and Black (2007) note that this language also may include game design features that allow for feedback about game performance and control of game pace.

Unlike the television literature, little empirical information is available about the linkage between specific features of game design and different-aged players’ ability to learn game content. For post-adolescents, age may be less crucial for impacting learning than frequency of game play (Blumberg, Rosenthal, & Randall, 2008). For younger players, however, one might draw on the findings from children’s learning from television to suggest that developmentally appropriate games are those with perceptually salient graphics, appealing music, cartoon-like characters, and comprehensible story lines. The words of one second grader, who was asked to respond to the author’s question about what she liked most about video games, may effectively capture what it means for a game to be developmentally appropriate, “Because I like the way it looks like and the songs.”

Interactivity. The contribution of interactivity to the appeal of digital games among diverse age groups has been well documented (see Vorderer, 2000). Sellers (2006) has characterized interactivity as that which “presents state information to the user; enables the user to take actions indirectly related to that state; changes state based on the user’s action, and displays that new state” (p. 13). Similarly, Lieberman (2006) cites interactivity as allowing for the type of performance feedback that helps the player to structure the game appropriate to their current level of understanding of game content. Thus, interactivity allows for a level of control and game customization that readily contributes to its ability to engage the player and maintain her attention, which in turn influences the player’s ability to learn from it (Grodal, 2000; Sellers, 2006). This level of control and customization may operate much like a scaffold from a Vygotskian standpoint whereby learning is maximized when framed within the learner’s zone of proximal development (DiPietro et al., 2007). However, rather than a teacher or adult providing the scaffolding, the game contexts allows the child the flexibility to decide how best to vary aspects of the game to better conform to their current repertoire of game skills and knowledge. This flexibility or level of control may very well contribute to a sense of mastery and motivation to revisit a given game despite frequent opportunities for failure or impasse. In the case of multigenerational play, interactivity also may allow for players to create developmentally appropriate game experiences, albeit differential experiences across players of different ages.
What can we learn about the age-appropriate video game from other countries’ game markets?

As noted above, a strong case can be advanced that children are most inclined to play video games that capitalize on their existing repertoire of cognitive and physical skills. Whether the playing of these games, be they educationally or leisure-based, can enhance cognitive skill development sufficiently to improve academic performance remains an open question among players of all ages. However, remarkably little is known about what it is that children learn, acquire, or refine through the playing of video games aside from often-cited aggressive affect or ideation attributed to violent game exposure (Gentile & Gentile, 2008).

Light on this issue is not readily forthcoming, even among countries with rapidly expanding video game markets as found in China and in Korea. In fact, until fairly recently, the Korean games largely dominated the Chinese online game market (see Cao & Dowling, 2008). As in the US, Chinese educators and government officials seek to harness the strong appeal of video games for academic purposes. This goal coincides with push to address the perceived vulnerability of Chinese children and adults to video and online game addiction (“China’s young escape into the web,” The Observer, November 20, 2005). This concern is marked by recent government controls requiring online game operators to log off players younger than 18 after having played a pre-designated number of hours (Ye, 2009). Fuel for this concern is likely to be fanned as the number of online gamers under 18 in China continues to grow, and ultimately outpace players in the US (China likely to surpass U.S. in video game market, 2009). The Korean government also maintains a concern with online game addiction although these concerns may be overshadowed by the strength of the online game development which grew by 20% in 2008 according to reports by Pearl Research in July, 2009.

The growth of the Chinese online video game industry, in particular, also has coincided with the development of games to promote learning in the schools. For example, in her blog for the Wall Street Journal, Ye (2009) reported on the incorporation of an online game, Sword of Justice, in the city of Suzhou’s school curriculum. The game, developed by the city’s prosecutors and educational officials, is intended to instill an understanding of societal ethics and respect for law. The efficacy of this game, or others developed by local governments such as Ningbo city’s Incorruptible Warrior which purports to teach students about corruption (Ye, 2009), remains unsubstantiated. Korean Air also recently released an online game in collaboration with Hansol to teach Korean children about career opportunities as a flight attendant (Flight attendant game takes flight, 2008). The benefits of this game for Korean children’s career development are unclear. In fact, as in the US, little information is available to support the attainment of academic or learning outcomes among Chinese or Korean children as a result of having played video games. Among Chinese students, this situation may be further compromised by lack of access to game console and the internet. For example, in their cross-cultural study of computer technology use among Chinese and US 10-15 year olds, Jackson, et. al. (2008) reported that US students reported using the Internet longer and more frequently than their Chinese counterparts. Similarly, US children were more likely to have used a computer at home than Chinese children, who in turn, were more likely to have not used a computer at all than US children. With regard to video game play, US children also surpassed Chinese children in video game play use and frequency of use.

Whether increasing access to the Internet and game consoles among Chinese children will be reflected in initiatives to investigate the academic potential of this access is unclear. What is clear is that China’s interest in educational game development is on the rise. One might surmise that among the most promising venues for game
development in China is that of mathematics and science education. In fact, the promotion of science literacy is of mutual concern to China and the US (see Craven & Hogan, 2007). Consideration of potential fruits of academic game development collaboration between two superpowers currently grappling with the ramifications of their fiscal and political interdependence, and strong concerns about the future academic preparation of their nations’ youth is certainly food for thought.

The bottom line
International interest in effectively building on the appeal of video games to promote academic learning among children is clearly strong. However, the efficacy of efforts to development educational games, particularly those meant to be played among family members, will need to take into account the developmental appropriateness of these games in addition to other aspects that have been shown to capture child players’ attention in the non-educational game market. Arguably, a precursor to these efforts is identifying those skills that children acquire and the content they learn in the context of video game play. A road map for how to design effective educational media and elucidate that which is acquired during its exposure is readily accessed by consulting the extensive body of work concerning children’s responses to educational television programming.
Research-Based Games:
Transforming Accidental Publishers into Effective Publishers
Alan Gershenfeld, Co-Founder and Managing Partner, E-Line Ventures

Foundations, non-profits, universities and government agencies that fund digital games to further their educational, health and social impact goals are game publishers – and yet most do not realize it. These organizations did not set out to become game publishers and certainly do not consider themselves game publishers – but they have taken on all of the key functions of a game publisher.

In the game business, a publisher serves the following functions:
- provides the capital to make games
- selects the development teams to design and create games
- manages developers through the game development process
- ensures the games reach their target market
- provides on-going support for games after launch

When a foundation, non-profit or university decides to fund a game they are responsible for all of the same functions:
- they provide capital for games (often through grants or RFPs)
- they select developers to make games (through a peer review board or similar selection process)
- they are ultimately responsible for ensuring that the games they fund are completed and that they reach their target audience.
- they track the overall impact of the game

Unfortunately most of these educational or impact-focused organizations are not staffed or equipped to effectively manage these responsibilities. As a result, the promise of harnessing the power of games for meaningful impact is simply not being realized.

The problem is not in the quality of the research. There is an exciting, diverse and growing body of research on how digital entertainment can transform learning. The problem is that this great research is not being effectively integrated into real games that can have real impact. The purpose of this paper is help provide a framework for addressing this problem; specifically, to provide a methodology for turning accidental publishers into effective publishers.

**Background**

Over the past few years, there has been a growing desire by foundations, non-profits, universities, government agencies, social entrepreneurs and philanthropists to make computer and video games that have the potential for meaningful social, educational and health impact.

This enthusiasm is based on a growing body of research, as well as common sense. Kids are passionate about games. 97% of all American teens play computer and video games; 75% of all kids regularly play games. There is also an increasing body of evidence that games can be effective for fostering 21st century skills such as creativity, collaboration, critical analysis, system planning and continuous learning. These are all critical skills that kids will need to thrive in an increasingly digital and inter-connected world.

As the recent report, *Game Changer*, from the Joan Ganz Cooney Center at Sesame Workshop concludes, ‘digital games offer a promising and untapped opportunity to leverage children’s enthusiasm and help transform learning in America’. And yet, despite the fertile research, the hundreds of research-based games funded to date and the millions of dollars being spent – we still do not have the Sesame Street of digital games.

Unless the dollars on research-based games are more effectively spent and begin to yield clear and meaningful results, the growing enthusiasm (and funding) for research-based games will
quickly dissipate and the enormous potential of games to engage, education and empower today’s youth will not be realized.

**Learning from Hollywood hubris**

The impact sector is not the first group to hear the siren call of games, or to underestimate the complexity of publishing games that kids actually want to play (or that teachers can effectively use). Since computer and video games emerged as a mass-market in the late 1980s, there is a long history of eager new entrants into the business. The most high profile example is Hollywood.

In the early 1990s, as game revenues began to rival the revenues of popular films – Hollywood took note. Until that point, the studios looked at video games as though they were lunch boxes; an opportunity for quick and easy licensing revenue. Once the movie studios saw the revenue and cross-marketing potential of games, they all decided to open their own game divisions with much fan-fare. A few years later and a few hundred million dollars poorer, nearly all of them left with their tail between their legs. The studios now all license or partner with traditional game publishers.

The impact sector is now embracing games with the same fervor that Hollywood did in the 1990s. They are also making a lot of the same mistakes. Millions of dollars have been invested in impact and research-based games that are sitting on shelves because they ran out of money, shut down because developers ran into technical troubles or have reached only a handful of players because they are not fun, do not fill a clear need or are not effectively marketed and distributed.

As a result of these misfires, some of the most pioneering foundations and government agencies are re-evaluating how – and if - they will continue to fund games. So, as we look to develop a new body of research around intergenerational games, it is important to think about how this research will be applied to the game(s) that attempt to leverage this research. Hopefully there will be as much rigor in how these research-based games will reach their audiences as there is in the underlying pedagogical research.

This paper will outline a proposed publishing methodology for impact and research-based games. While there are many approaches to publishing digital entertainment, there is more commonality than differences among the approaches of successful game publishers - and this paper will attempt to build on some of these proven approaches.

**Research-based games: A publishing methodology**

Game publishers spend a significant amount of time planning their portfolio or ‘slate’ of games each year. A primary driver of this planning process is the setting of financial targets. While profit is clearly not the primary driver for a foundation or government agency, often reaching a large a number of players and reaching financial sustainability are primary drivers. Accomplishing these goals requires a similar analysis around target audience, supported platforms, talent sourcing, marketing, distribution and support.

The analysis also includes developing a clear plan for how new ideas get sourced as well as what thresholds they need to reach to get financed, follow-on financing and marketing commitments. This analysis is as relevant to a small foundation seeking to spend $25,000 to make an impact game as it is to a major government agency planning to spend millions across a portfolio to really move the needle in terms of major social or educational change.
The following is a list of questions that a publisher would cover in their planning/greenlight process synthesized with questions that are relevant to organizations prioritizing a social or educational return on investment. While there is some logic to the order of the questions, they are inter-related and should be considered together to build an integrated, effective publishing strategy:

- Who is the target audience and what is the desired impact?
- What is the best game platform and genre to reach this audience?
- What are the financial needs and expectations of the project?
- What is the competitive landscape and is there market demand?
- Who is the most effective team to develop the game?
- What is the organic gameplay alignment between fun and impact?
- Who will manage the developer and trouble-shoot if needed?
- How will the game reach the target audience?
- How will the game be supported once released?
- What is the methodology and plan for assessment?

An entire white paper could be written on each of these questions, but here a few high-level discussion points around each question:

**Who is the target audience and what is the desired impact?**

**Target audience:**
- What demographic?
- Age, Gender, Geography, Economic Level
- What psychographic?
- Passions, Interests, Communities
- Context/Setting
- Home (un-moderated, parent moderated)
- After-school (un-moderated, facilitator-moderated)
- School (core, supplemental)

**Impact:**
- Testing research thesis
- Learning
- Awareness building
- Behavior change (e.g. healthy eating, civic participation)
- Raise money

**What is the best game platform and genre to reach this audience?**

**Dedicated gaming consoles:**
- Nintendo Wii (approximately 45 million units sold)
- WiiWare download platform
- Microsoft X-Box 360 (approximately 27 million units sold)
- X-Box Live Arcade (XBLA) download platform
- Sony Playstation 3 (approximately 19 million units sold)
- Playstation Network (PSN) download platform
- Playstation 2 (approximately 50 million units sold – not sure how many are still active, but this could be a useful research opportunity.)
- PlayPower ($10 computer in the developing world)

**Dedicated hand-holds:**
- Nintendo DS (approximately 100 million units sold of various flavors)
- Nintendo DSi
- Sony PSP (approximately 40 million units sold).

**Personal computers (PC/Mac):**
- Games as Product
- Boxed game through retail
- Downloadable game
- Browser-based game
- Games as Service
- Virtual world
- Social Networking game
- Other
- ARGs
Mobile devices:
• Phone specific applications (e.g. iPhone)
• Cross-phone applications
• Browser-based mobile games
• SMS-based games.

What are the financial needs and expectations of the project?

Balance between revenues and impact:
• Non-profit
• fully subsidized
• sustainable revenue
• For-profit
• double-bottom line/blended value
• maximize revenues

What is the competitive landscape?
• What similar games?
• What else has pull on audience mindshare?
• What evidence of market need or desire?

Who is the most effective team to develop the game?
• Does team have experience on chosen platform?
• Does team have experience in genre?
• Is team building on ‘code-released’ technology?

What is the organic gameplay alignment between fun and impact?
• Has team made fun games that have engaged large audiences?
• Is team building from proven gameplay mechanic?
• How early can team get alpha/beta feedback from players?
• Is there budget and time to incorporate feedback?
• Is there a way to accomplish goals without hitting impact on the head?

Who will manage developer and troubleshoot if needed?
• Team member/consultant who can see warning signs of trouble
• Team member/consultant who can troubleshoot or find people who can
• Most likely ex-producer from leading publisher of similar games

How will the game reach the target audience?
• Marketing
• A craft like game design and development
• Finding team who has successfully marketed to target audience with similar content/services
• Distribution
• Partner vs. Build
• Partner for high barrier to entry (e.g. retail, school)
• Build for low barrier to entry (e.g. social network)

How the will the game be supported once released?
• Games as product
• Customer support
• Games as service
• Team to continuously upgrade and optimize

What is the methodology and plan for assessment?
• Build into design and budget
• Real-time assessment for games as service
Intergenerational Video Game Play
Jake Harwood, University of Arizona

Executive Summary: This paper summarizes some of the existing information on seniors and video games and presents it in the context of more general research on communication and aging. Key areas meriting attention in intergenerational video gaming are proposed, including maintaining physical health, developing universal interface design, promoting positive intergenerational relationships, and aiding grandparents raising grandchildren.

Potential benefits
There are a host of potential benefits for older adults from playing video games. These are briefly mentioned at the outset and some are further elaborated later.

- Improving/maintaining cognitive skills such as mental speed, language or memory function (e.g., see: ncsu.edu project)
- Positive attitudinal effects (e.g., attitudes towards technology among older people: Ryan et al., 1992)
- Fine motor control improvements
- Reaction time improvements
- Visual acuity and responsiveness
- Reducing illness/injury (public health training, balance training to prevent falls: see CNN.com)
- Driving skill training and assessment (see Allstate).
- Enhancing physical health (e.g., via the Wii – WiiFit, WiiSports)
- Social interaction (e.g., via networked multiplayer games; internet games: see Gamberini et al., 2008)
- Social support (e.g., for isolated seniors, but also for seniors who are involved in caregiving for spouses, etc.)

All of these are areas in which various subgroups of the older population experience challenges and might benefit from the accessibility and appeal of games. It should be emphasized that none of these are areas in which all older adults need help or assistance; some popular coverage of older adults’ use and interest in video games tends to stereotype older people in less than constructive ways. An important final note here: Older adults DO play video games. Current data from the Entertainment Software Association indicates that almost a quarter of those over-50 play video games (Pavlik, 2008), and recent platform additions such as the Wii appear to have the potential to make that number increase.

For children, there are some similar potential benefits, as well as independent outcomes that could simultaneously be addressed. There are obvious traditional learning outcomes (literacy, knowledge acquisition, etc.). In addition, some games offer the possibility to help in health challenges facing children (e.g., obesity reduction – from games involving physical activity, and from any ensuing positive attitudes about exercise). Specific to playing games with grandparents, we should examine whether such activities enhance positive attitudes towards aging—positive attitudes towards aging have beneficial life-long outcomes and have been shown to be improved by contact between grandparents and grandchildren. We don’t know whether video game play as a structured and fun activity might be particularly beneficial on this front. Specific benefits do seem likely in changing younger people’s attitudes about older adults’ technological competence. Independent of attitudes about aging, the activity could enhance the specific relationship which would be a positive outcome.

Challenges for older adults from interface design
When looking at the possibilities for older adult video game use, there are important issues of interface design. In terms of hardware, controllers for traditional video games (e.g., PlayStation, DS) are not well-designed for some older adults. Some older adults also experience problems using traditional PC mouse-type interfaces. The controls on the Nintendo DS are also very small for some older people, however the pen-interface
is intuitive and usable. The Wii, on the other hand, has proven very senior-friendly and seniors’ adoption of the Wii has been well documented (bjhcim.co.uk, Douban, 2007). Other more radical interface alternatives are discussed later in the paper.

Software also demands attention. There is a fair amount of work here with, for instance, appropriate web design for seniors, etc., but I know of no work on gaming specifically. Still, the web guidelines available (e.g., NIH) provide a helpful starting place for thinking about sensible interface design for older adults. Content issues are discussed later.

Grandparent-grandchild play
There is relatively little research on grandparents and grandchildren playing together (whether via traditional games or electronic gaming), although there are some data that older adults are particularly drawn to games that bring them together with their grandchildren (Mubin et al., 2008). There’s also evidence that Boomers are more likely to be playing computer games with their grandchildren rather than with their children, including on-line games with geographically distant grandchildren (Pearce, 2008). When grandparents and grandchildren play board games, sports, role-play, hide and seek, or whatever, are there benefits? To whom do those benefits accrue, and what are they specifically? When considering the grandparent-grandchild relationship, one qualifying factor of interest here would be whether any of these effects vary for:

- grandparents who are raising grandchildren (see also below), vs.
- grandparents who just visit grandchildren (and perhaps rarely), vs.
- grandparents who care for grandchildren on a regular basis but are not the primary caregiver, vs.
- grandparents who live with grandchildren but are not primary caregivers.

Each of these groups has specific needs and constraints; in some cases it’s to bring people together who are physically distant, which obviously would be benefitted by networked games, on-line games, and games that allow meaningful social interaction (e.g., second-life style environments). Others might require structured activities and educational content (e.g., grandparents who are caregiving regularly and are want to contribute to their grandchildren’s development). Others might require more socioemotional content and activities that support relationships that might be stressed.

A second issue would be whether certain types of grandparents do more/less play with their grandchildren or different types of play? The literature differentiates, for instance, between “supportive” and “authoritative” grandparents; the former have more exchange-oriented relationships (which might feature more play) while the latter have more authority and control-oriented relationships with the grandchildren (that might be less suited to play, or that might require the “play” to be more structured and goal-oriented -- for instance, one recent study shows grandparents structuring learning for grandchildren in a computer-based task – Kenner et al., 2008).

I suspect there are interesting avenues for examining intergenerational interaction both within and outside of the game. For instance, some recent research looks at how the “digital divide” (between age groups) is a rhetorical resource during family game play: adults cede control to kids because “kids understand” the gaming environment (Aarsand, 2007). So, this is a useful setting to examine power dynamics in the family, and gaming is an interesting environment to reverse those dynamics and give children opportunities to exercise leadership (which might even be an interesting outcome to examine).
**Cultural issues**
In some families (particularly immigrant families), grandparents and grandchildren may have communication barriers imposed by language differences (e.g., monolingual Spanish speaking immigrants in the grandparent generation, along with monolingual English speaking grandchildren). Parents in such contexts often serve as linguistic brokers between the generations, a role that could be taken on by a carefully designed bilingual game. The game could aid in development of language skills in both generations so as to facilitate interaction outside of the game. More broadly, specifically tailored games could encourage sharing of cultural, family, etc. information both inside and outside of the game. Grandparents often see themselves as a cultural resource for the grandchildren, and parents may also look to grandparents to serve a cultural socialization function—these are nontrivial issues that could make the game play appealing to multiple generations and lead to it having the institutional support of family decision makers. There are covariations between some of these cultural issues and the prevalence of both grandparents raising grandchildren and grandparents cohabitating with grandchildren, which might add to the contribution that work in this area could make (see also below for more on grandparents raising grandchildren).

**Distance issues**
Grandparents and grandchildren are often geographically separated. Such separation deprives both generations of a relationship that has demonstrated benefits for both (e.g., in terms of knowledge of family traditions and attitudes about aging for grandchildren; depressive symptoms and feelings of family continuity for grandparents, etc.). Networked gaming offers some great opportunities for maintaining rich and meaningful contact between such groups; there is already work emerging on this topic (e.g., a rather elaborate distributed hide-and-seek game involving Bluetooth and RFID beacons: Vetere et al., 2006a, 2006b). There also might be some benefit in exploring virtual-worlds-type environments; e.g., sites like Club Penguin are very popular among 5-12 year olds, and provide a location for shared activities and ongoing social interaction. These kinds of environments could be developed to include more educational content, and more options for secure and unconstrained interaction and activities between geographically-separated family members. Clearly more content that was appealing to adults would be required. A family-friendly option on a site like Facebook would also be interesting to explore, with options for building small family groups that kept kids clear from the broader Facebook environment but allow interaction, use of limited tools, games, virtual scrapbooking, etc..

Recent very solid work demonstrates that grandparents who move away from their grandchildren (or whose grandchildren move away) suffer significantly increased levels of depression (Drew & Silverstein, 2007). Some of the options above would be very helpful here.

**Grandparents raising grandchildren**
This is a population of special concern here. These grandparents are at particular risk of physical and psychological stress and illness. There is a very substantial literature on how social support ameliorates such stresses, but very little on how other factors might assist grandparents in such roles. In particular, we don’t know much about how entertainment might function in these contexts. I see a number of potential pathways for joint game-play to provide an interesting avenue for research.

- Game play might help build the relationship with the dependent child via activities designed to build on individual and shared competences (see also below).
- Some forms of game play (particularly the Wii) would contribute to physical activity for a group that doesn’t have much free time for exercise.
- Game play might contribute to maintenance of cognitive function.
- Networked/Internet game play might provide opportunity for connection and support from other grandparent-grandchild dyads.
The quality of care for the children is of course important here, and attention to the grandchild is an important component: kids don’t get good care from highly stressed and exhausted caregivers. Grandchildren in these settings are often (though certainly not always) somewhat at risk themselves – grandparents often end up raising their grandchildren because of trauma, incarceration, death, drug use, etc. in the parent generation. So, there are specific reasons to tailor interventions particularly at this group of children. Relevant outcomes for children would include
• Quality of care received
• Feelings of being supported and having a family
• Psychosocial / mental health outcomes, etc.

Game design issues
There are numerous ways in which game design could incorporate knowledge of the grandparent-grandchild relationship and aging concerns in productive ways.
• Game play might explicitly include activities designed to build on individual and shared competences. We know a good deal about the relative strengths of different age groups in terms of, for instance, cognitive and motor skills (older adults typically have slower and less fine motor skills, but better general knowledge and abstract reasoning skills as compared to pre-teens). Games that require combinations of skills that are likely to involve both older and younger generations contributing to a successful outcome would be the most productive relationship builders, and probably the most engaging for both parties.
• There is at least one study on broader social contact between generations suggesting that engaging in socially meaningful activities (e.g., charity work) together is more enjoyable and rewarding than playing games (board games) (Marx et al. 2005). There might be some merit in considering ways of incorporating the greater social good into gaming environments – in other words, connecting the game-playing/on-line world with the real world might provide an incentive to play, and to support off-line activities between the older and younger person.
• Game play should be viewed as part of a broader relationship. So, for instance, it would be useful if game design involved issues that stimulated contact and discussion outside of game play. Perhaps a game involving making a movie together, or doing some other joint creative activity where there is a shared end product, where planning is necessary, where a narrative might stimulate extra-game conversations and planning, etc.
• There is a substantial literature on older adults’ media preferences more broadly (e.g., television programming). Older people tend to prefer news and informational content, and to avoid pure entertainment programs (Harwood, 2007). All generations tend to prefer content that includes characters of their own age. So, it would be helpful if game play included similar elements -- various age avatars from which to select, if there are other characters in the game they should be diverse in terms of age, and some of the content should be informational (see also point above about competences; older adults will outperform kids on “trivia” / “general knowledge” type quizzes).
• Exchange between grandparents and grandchildren is an area of some research interest. This has been examined in the play context explicitly (see Vetere and colleagues’ “magic box”), revealing considerable benefits from a physical exchange; presumably similar effects might emerge from certain forms of virtual exchange (see Davis and colleagues’ “virtual box”).
• Other game environments beyond PC and console are interesting – there is an “age invaders” game specifically designed for grandparents and grandchildren which incorporates a large physical space and an Internet component. The game is clearly impractical in its current incarnation but has interesting implications for home game
design. It incorporates meaningful physical activity -- a good feature for both an older and younger population (given concerns with older health and younger obesity). It also incorporates the ability for play involving both co-present participants and participants at a distance, hence, for instance, allowing play between parents and children with grandparents present at a remote location. See: http://tinyurl.com/4hvkw\d / Another alternative environment uses the table-top as a starting point, building on the idea that “sitting around a table” is a natural way for humans to gather (Kim et al., 2008). The U-table environment in these games involves a visual display and the possibility of individuals sitting around the table to go fishing for virtual “fish” with real rods. Other interfaces offer similar diversity in input devices (e.g., Guitar Hero or Rock Band). Finally, some interfaces/designs operate so as to address multiple of the issues described here. So, for instance, virtual augmented exercise (VAE) games involve physical activity and puzzle-solving game play, such that physical activity is used to achieve game goals (e.g., adjusting cadence in bicycling speed to shift an avatar’s height on a screen). These games have shown good adherence rates among older adults, an offer the promise of similar collaborative game environments that would be interesting and beneficial for older and younger individuals (van Schaik et al., 2008).

• Interestingly, there may be some similarities between child-friendly and senior-friendly interfaces, although such parallels might apply more to younger children (and, indeed, older seniors). For instance, fine motor control can be an issue with younger kids and older seniors; reaction times are a concern with older adults (I don’t know about kids), etc. While I typically resist characterizing older adulthood as a reversion to childhood, on certain very specific fronts there are ways in which skill development for children can mirror skill retention (or even reacquisition, for instance post-stroke) in older adults. There are also areas where both parties have rather different interest in the same activity. Teens, for instance, might be interested in a driving-skills training game as part of preparing for becoming drivers themselves (a strong motivational force for teens!). Significant numbers of older adults might be interested in the same game as part of understanding whether their skill level is being maintained and/or to provide driving skills refresher training (Belchior, 2008).

• It’s important to resist stereotypes of older adults as “stuck in their ways.” However, it’s also important for attempts to involve older people in new technologies build on existing competencies. So, attempting to immerse an older person in a new medium, with a new interface, playing a new style of game with a new visual vocabulary may be unlikely to succeed. There’s evidence that older people prefer computer games that build on existing games (Mubin et al., 2008), and indeed this might explain anecdotal reports of Wii bowling becoming so popular among older users. More broadly, it’s important that games for older people build on existing competencies.

Priorities
From everything discussed herein, three specific areas seem to offer the potential for the greatest intergenerational benefits.

• Examination of networked/on-line gaming options for grandparent-grandchild dyads who do not live in close proximity. This is one of the most frequent reasons for grandparents and grandchildren losing touch with one another or failing to maintain more than a superficial relationship. Geographical distance between grandparents and grandchildren is very common due to relocation in all generations.

• Identification of gaming environments that best match interests and skills of older and younger people while simultaneously addressing desirable outcomes for each. Skill differentials between grandparents and grandchildren are common, whether in terms of intellectual, technology-
specific, or cognitive/motor skills. Games that reward diverse skills, that require complementary skill sets from participants, or that are non-competitive/collaborative/creative seem most likely to provide environments that will work intergenerationally. If these games could also involve physical activity then that would be excellent: physical fitness issues are a key challenge facing kids and older adults.

• The integration of gaming into the day-to-day lives of dyads where grandparents are raising grandchildren. These are perhaps the most high-risk individuals that could benefit from the current initiative. Integration of gaming into these individuals’ lives to promote positive relationships and intergenerational appreciation, physical fitness, psychological adjustment, and social support is a very promising direction for research and application.
“Hey Dad, You’ve Got to See This City I Built…”: The Dynamics of Intergenerational Game Play

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The introduction of mobile phones, instant messaging, social network sites, and other forms of new digital media makes visible and transforms the everyday landscapes of learning. Given recent evidence concerning the pervasiveness of game play among almost all teens and nearly half of American adults (e.g. Kahne, Middaugh and Evans 2008, Lenhart, Jones and Macgill 2008), video games clearly play an important role in today’s new media and learning ecologies. Moreover, according to a recent pew study Pew, two-thirds (66 per cent) of parents or guardians of children age 17 or younger play games, although less than one-third (31 per cent) report that they play games with their children. By comparison, less than half (47 per cent) of non-parent adults reported that they were gamers, a distinction that suggests that there is tremendous potential for educators, parents and others to leverage the familiarity and interest many parents have in game play to support and mentor their children (Lenhart, Jones and Macgill 2008). Yet, from the perspective of someone who is interested in the relationship between place – both in the sense of locality and social location – and participation in and through new media, a number of questions remain around who and how different generations may be engaging with new media and how the broader experience of class, income, ethnicity, race, gender and other axes of power shape the participation in the new media ecology. In this essay, I draw upon my research on the “Kids Informal Learning with Digital Media: An Ethnographic Investigation of Innovative Knowledge Cultures” and the “Information Society: Emergent Technologies in the Global South” project to reflect upon the possibilities and parameters that shape the potential for intergenerational game play in the new media and learning ecology.

Video games and intergenerational dynamics

In our study of youth (primarily) in the United States, we identified two forms, or genres, of participation that structure young people’s engagement with new media. The first, what we termed “friendship-driven genres of participation”, involves youth’s participation with their friends and peers who they know primarily from school, but also through religious activities and organizations, sports and other place-based groups. At the other end of the spectrum were “interest-driven genres of participation” wherein young people engaged with others who they shared specialized activities and interests often considered niche and marginalized in the eyes of mainstream society. For many American teens, a “friendship-driven genres of participation” dominates much (although not all) of young people’s participation in their local, peer culture using new media (see Ito, Horst, et. al. 2008; Ito, et. al. forthcoming).

Interest-driven genres of participation emerge around a particular interest or topic, such as playing video games or around a specific game. Throughout the research on the Digital Youth Project, we found numerous interactions between parents, children, siblings and even extended family around new media, including video games. Indeed, some of the most productive interactions between adults and youth emerged around a shared interest in video games and game play (see Horst forthcoming, Ito and Bittanti forthcoming). Many parents discussed how using media such as video games facilitated intergenerational communication and bonding. Kids noted that they enjoyed sharing their achievements and interest in video games with parents who will listen to their interest in the game and what they are discovering and strategizing. Moreover, from a kids’ perspective, when they play video games with parents, uncles and others there is a certain suspension of the...
normal dynamics of family life wherein parents and those who are older are automatically granted positions of power and authority.

Adults and kids playing video games represent an interest-driven genre of participation. While playing games together, playing the same game (separately) or even sharing an interest and participation in other forms of gaming possesses the potential to spur the creation of shared beliefs, values, information, rules and relationships. While distinctive roles, responsibilities and modes of expertise may emerge in interest-driven practices, the transmission of knowledge and expertise are not determined by virtue of age. Rather, knowledge and expertise are created through interactions in (and out) of video game play. Kids or adults with the greatest expertise assume responsibilities, take on roles as mentors, enjoy and maintain their reputation associated with expertise. Yet, intergenerational dynamics should not be seen as isolated to the act of game play. Sustained interest and engagement is critical to sustaining and reinforcing the positive dimensions of intergenerational game play. To gain “cred” as a gamer who is a peer (not necessarily a parent) with an interest in the experience of game play and/or a particular game, parents and other adults need to be able reinforce their interest in domains outside of the micro-world of game play. Indeed, the dynamics of interest-driven participation and learning takes place not only ‘in the moment’ of video game play, but also in the follow up conversations and discourse that reflects engagement, immersion and the development of expertise around gaming (see Horst, Herr-Stephenson and Robinson, forthcoming). Without this discussion and sustained interest, playing video games with parents and other adults may be tinged with the label of “family time” that reverts to the same social norms of authority and expertise interest-driven forms of participation encourage.

While it is promising that parents and kids can come together around interest-driven practices, it is also clear from the research that gender dynamics also play a significant role in the ways that intergenerational engagement with video games occurs. For example, boys across a range of class status recalled their first experiences being exposed to video games while sitting on their father’s laps or hanging around living rooms while family members played games (this was particularly prominent in working class families who have historically invested in gaming systems rather than PC-based games). In these spaces, fathers, uncles, older brothers and others important become playmates and mentors. For instance, Miguel, a ten-year-old who lives in the San Francisco Bay Area, (Dan Perkel and Sarita Yardi, Digital Photo-Elicitation with Kids) explained the importance of video games in family life to Dan in their interview: (also cited in Ito, et. al. forthcoming)

Dan: Where did you learn to play all of the games on your PlayStation?
Miguel: Well, my dad, we used to play like every night . . . every Friday night, Saturday night, Sunday night, whatever.
Dan: You used to play with your dad?
Miguel: Yeah, and he would invite my cousins to come over and stuff. We’d borrow games from my uncles.
Dan: Were they all older than you?
Miguel: Yeah.
Dan: And did they teach you how to play or did you figure it out for yourself?
Miguel: They taught me how to play. Like, I used to . . . you know how when you play car games the car moves to the side and stuff? I would go like this with the control [moves arms wildly from side to side simulating holding a game controller as if he were racing]. So . . . they taught me how to keep still and look at the screen . . . hand-eye coordination.
Dan: Hand-eye coordination? Where did you here that term from?
Miguel: TV.
Both: [laugh]
In contrast to “fun” male figures who participate in recreational (and more intense forms of) gaming with boys like Miguel, kids often describe their mothers, aunts and other female figures as “clueless” or “hopeless” with video games and other new media outside the domain of communication technologies. Moreover, in many households women are the individuals who are the enforcers of ‘rules’ around time limits and genres of games (see Horst, forthcoming). In other instances dads actively undermine the mother of the household by taking the kids to the store and buying them games behind their back.

Despite this association between games, men, and boys, recent trends suggest that women are one of the fastest growing market segments in the gaming industry and Lenhart, Jones and Macgill (2008) note that women played games at approximately the same rate as men, although women tend to play fewer console games than their male counterparts. Indeed, women (particularly mothers) were prominent members in guilds, competitions (e.g. Neohome contests) and activities in our study of Neopets (Horst and Robinson, Neopets). Many mothers interest emerged through an initial desire to see “what this Neopets thing was all about”, but, like many social media, their interest evolved from a way to understand what their kids were doing to “having fun” with the puzzle games and other activities. Women and mothers also played “casual games”, such as Hearts and Solitaire as well as on mobile phones. Yet, few of the mothers identify video games as a key interest. In addition, the types of games many women and mothers enjoyed, often games concerned with “aesthetics” or “design” are ghettoized by men, boys and others in the gaming community as not “serious” or “real games”. Similar issues emerged in our work on gaming among teenage girls; being a girl and a “gamer” is often discouraged socially (Ito and Bittanti, forthcoming). In other words, while much of what I have discussed suggests that fathers and other males in the family (uncles, cousins, etc.) may be the most fruitful inroad into intergenerational play, but one which should be carefully considered given the significant risk of further alienating women, thus reproducing and exacerbating negative dynamics in gaming practice and intergenerational game play.

Designing game play and game contexts

Although the particular expressions of sharing media and knowledge between parents and kids vary with parents’ own technical expertise, education, gender, time, and command of English in the monoglot United States, many parents expressed the desire to create spaces and times to be with their kids. Much like after-school programs and other educational institutions that attempt to harness young people’s passion for media, families leverage media in their everyday interactions. The challenge for parents is to create an atmosphere or infrastructure wherein interest-driven genres of participation are encouraged. Rather than a forced family gathering (e.g., “family time”), an authentic interest in a particular game or game genre wherein adults and/or parents can discuss, comment upon and strategize outside of game play is necessary to maximize intergenerational game play. Disrupting gender stereotypes will also be critical for such interest-driven participation to take place.

The Digital Youth Project

The Digital Youth Project was a three-year ethnographic study of primarily American youth’s engagement with new media between 2005 and 2008. See http://digitalyouth.ischool.berkeley.edu/. Throughout the project, I carried out research as a Postdoctoral Researcher at the University of Southern California (advised by Mizuko Ito) and University of California, Berkeley (advised by Peter Lyman and Barrie Thorne). The “Digital Youth Project” was funded by the John D. and Catherine T. MacArthur Foundation. “Information Society: Emergent Technologies in the Global South” involved simultaneous, comparative ethnographies of rural and urban communities in India, Ghana, Jamaica and South Africa between 2003 and 2005. Throughout the project I was a researcher in Jamaica (collaboration with Daniel Miller). The project was funded by the British Department for International Development.
A second challenge will be to design games in the right genres and in ways that are authentic and engaging to both generations (6-9 year olds and adults/parents). Often kids want to play the games their parents do but this typically involves compromise in terms of content. Parents worry that games that they may find engaging are too violent, networked games expose kids to coarse language and many parents believe that their kids are not able to handle the cause-effect and complex logic of the games adults find challenging. By the time kids are part of the way through elementary school, video games explicitly marked as “learning games” tend to be less appealing to kids because they are viewed as “less authentic” games that constitute popular culture (and their peer worlds). While there is admittedly a critique of commercialization of games in middle class culture (I do not want to underestimate the pervasiveness of consumer culture in kids’ lives, see Pugh 2009, Seiter 1993), use of popular culture games, such as Pokemon and other games, continues to be important given that kids traffic in popular culture and use popular and consumer culture to create what Alison Pugh (2009) has recently termed “economies of dignity” within their peer and school culture. While the purchase of materials and items to support such games may create an intergenerational opportunity to discuss the value and meaning of game play, leveraging these activities in the name of education may reinforce existing inequities (see Seiter 2007) and could place an additional burden on parents without the means to support the purchase of new games, cards and other objects.

Alongside game genres, platforms will also be important. For example, while it may be tempting to explore with innovative platforms on the iPhone, Wii, PlayStation 3, Xbox or the latest PC games, encouraging participation and intergenerational game play across generations and socioeconomic spectrums may require using the cheaper, and more ubiquitous platforms. Certainly if the desire is to support of intergenerational game play at home and in multiple contexts (e.g. beyond or in conjunction with specialized programs and school events), a consideration of consoles and platforms that may be out of the economic reach of the populations the Joan Ganz Cooney Center is concerned to address and support.
Parentese: How Differences in Parenting Styles May Influence
Susan B. Neuman and Ellen Hamilton Newman, University of Michigan

We explored three literatures to examine the influence of socioeconomic status on parenting styles and interactions with children. As it will be shown, styles of interaction between middle-income families and low-income families vary dramatically. We believe it essential to pay attention to these differences, and to potentially explore how we might be able to use the technology creatively to break down some of these conventional barriers. Briefly, key bullets are described in each section—a full citation list is available upon request.

The Motherese/Paren-tese Effect
A mother’s attempt to communicate with her child is often done in a sing-songy, slow, and deliberate language that is often called “baby talk.” An enormous literature, however, has actually described this talk as extremely benefits to children’s language development. Studies looking into the characteristics of this type of facilitative talk note its common features:

- Produces much language—quantity and quality
- Repeats and rephrases to help child gather meaning
- Extends the child’s meaning. “Yes, it’s a cave. A cave is like a hole in the mountain”
- Engages child in lots of parent child dialogues

All of these features have been commonly recorded in middle-income homes. They are much less frequent in low-income circumstances. In these situations, parents are known to shut down, use little language, often punitive, or highly directive with their children. Now considered a classic in the field, the Hart and Risley study demonstrated a 30 million word ‘gap’ between middle-income families and low-income families. Further, in a second book, they found an extraordinary similarity in the parent and child talk (both frequency and variety). In other words, quite early on, the child begins to mirror the language sophistication of her parent. Hart and Risley suggest that it would take 41 hours of extra intervention per week, prior to age 4 to close the gap.

The distancing effect
Irving Sigel and his colleagues are perhaps most widely known in this field. His work highlighted not only the differences in the quality of language for parents and children in difference SES groups, but in the level of conceptualization. In other words, middle-class parents engage children quickly in language targeted to abstraction—they help the child begin to conceptualize beyond the here and now by referring to ideas and actions that are not immediately there. He called it a rather awkward term: distancing. Low distancing means that parents focus on concrete, immediate stimuli; high distancing is higher level conceptualization. The chart below is useful in making these distinctions.

Once again, low-income parents are known to use low-distancing strategies, focusing on the immediate; middle-income parents use the higher level strategies. Sigel has amassed a large evidence base on these differences, and their effects on child achievement. Much like Basil Bernstein years ago, he finds that children develop better comprehension skills, better abilities to inference and generalize as a result of high-level conceptualizations.
**Concerted cultivation**
Annette Lareau created this term—In her work, she observed middle class, working class and poor families with children between the ages of 9 and 10. Her ethnographic observations reveal that differences among families tend to cluster by social class.

**Middle class families stress concerted cultivation**
- The job of a parent is to develop a child’s ability to “cultivate his talents in a concerted fashion”
  - Parents enroll children in organized activities such as sports, dance, music lessons etc. where children are engaged with adults
  - Through such activities children learn to “question adults and address them as relative equals” (Lareau, 2003, pg 336)
- Middle class families tend to use language that contributes to the concerted cultivation approach.
  - There is an overall parental focus and emphasis on reasoning with children through adult/child discussions.
  - Parents develop and cultivate their child’s views and opinions
- Middle-class parents tend to use directives only for health and safety matters.
- Negotiation is an everyday part of language.
- Children from middle-class families gain an emerging sense of power and entitlement brought about by this concerted cultivation.
- “From the experience of concerted cultivation, they acquire skills that could be valuable in the future when they enter the world of work” (Lareau, 2003, pg 337).
- These children however spend less time with extended family members and have less unorganized leisure time. Lareau admits that middle-class children are less skilled in organizing their own time, as well as interacting with adults in a “non-obtrusive” manner.

**Table 1. Types of distancing strategies categorized by level**

<table>
<thead>
<tr>
<th>High-level distancing</th>
<th>Medium-level distancing</th>
<th>Low-level distancing</th>
</tr>
</thead>
<tbody>
<tr>
<td>evaluate consequence</td>
<td>evaluate similarity</td>
<td>label</td>
</tr>
<tr>
<td>evaluate competence</td>
<td>describe similarities</td>
<td>produce information</td>
</tr>
<tr>
<td>evaluate affect</td>
<td>infer similarities</td>
<td>describe, define</td>
</tr>
<tr>
<td>evaluate effort and/or performance</td>
<td>infer differences</td>
<td>describe—interpretation</td>
</tr>
<tr>
<td>evaluate necessary and/or sufficient</td>
<td>symmetrical classifying</td>
<td>demonstrate</td>
</tr>
<tr>
<td>infer cause-effect</td>
<td>asymmetrical classifying</td>
<td>observe</td>
</tr>
<tr>
<td>infer affect</td>
<td>enumerating</td>
<td></td>
</tr>
<tr>
<td>generalize</td>
<td>synthesizing within classifying</td>
<td></td>
</tr>
<tr>
<td>transform</td>
<td></td>
<td></td>
</tr>
<tr>
<td>plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>confirmation of a plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>conclude</td>
<td></td>
<td></td>
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<tr>
<td>propose alternative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>resolve conflict</td>
<td></td>
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</tr>
</tbody>
</table>

Note: Three main groupings are used based upon the level of the distancing demand upon the child.
Working-class and poor families, on the hand, stress the accomplishment of natural growth

- The job of the parents is to provide love, food and safety so their children will grow and thrive. They do not focus as much on developing their child’s cognitive abilities or talents.
- These parents see a boundary between adults and children.
- Children from working-class and poor families often organize their free time and have less adult structured activities.
- Parents spend less time on concerted cultivation, seeing a child’s free time as not their responsibility to organize and carry out.
- “[Children] often have more “childlike” lives, with autonomy from adults and control over their extended leisure time”.
- Working class and poor families use language that contributes to an accomplishment of natural growth approach.
  - Parents are not as focused on developing their children’s opinions, judgments and observations.
  - Parents listen when children talk but tend not to use follow up questions or comments.
  - Negotiations between parent and child are infrequent.
  - Parents use firm directives and expect children to listen and follow directions with little discussion or negotiation.
- Often children from working-class and poor families develop a sense of constraint accepting the actions of people in authority.

Bottom line, middle-class parents actively engage their children in learning activities; they feel responsible for ‘teaching’ and helping children become accomplished. Poor families are more laissez-faire, and often don’t feel efficacious in directing their child’s learning. As a result, Lareau argues that there are enormous differences in achievement due to these sociological patterns.

If we can, as a group, begin to redirect these patterns, it could have an extraordinary impact on children’s relationships with their families, or mentors, and might have an important impact on achievement immediately as well as in the long run.
references


Howard Giles, H., R. Dailey, & M. Jayashree (2007). Intergenerational communication beliefs across the lifespan: Comparative data from India communication reports, 20(2), 75-89.


