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**THE DIGITAL GENERATION: TEACHING TO A POPULATION THAT SPEAKS AN  
ENTIRELY NEW LANGUAGE**

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# **THE DIGITAL GENERATION: TEACHING TO A POPULATION THAT SPEAKS AN ENTIRELY NEW LANGUAGE**

## Introduction

Traditional aged students today were born in 1987 and according to the Beloit College's Mindset List for the Class of 2009, "they don't remember when "cut and paste" involved scissors. They learned to count with Lotus 1-2-3. Voice mail has always been available. They may have fallen asleep playing with their Gameboys in the crib. Bill Gates has always been worth at least a billion dollars. Pixar has always existed. Digital cameras have always existed. Time Life and Warner Communications have always been joined and they have always been challenged to distinguish between news and entertainment on cable TV". These are the "digital native".

The term "digital native" and "digital immigrants" comes from Marc Prensky a writer, speaker, consultant and inventor in educational games and learning processes. In coining these terms Mr. Prensky is drawing on the analogy of natives to a homeland and in this case we are talking about the digital land or those who have always known the internet and the immigrants are the ones that are coming to this new land, some kicking and screaming and others eagerly exploring and learning the new skills, language, and culture needed to travel in this digital world (Prensky, 2001). In this new digital land the natives have an advantage over the immigrants. This advantage stems from the immigrants lack of cultural context with which to judge, and perceive experiences, while the natives grew up in the new land and have assimilated to the environment. The natives have subtle differences in speech, social interactions, and are fluent in the digital communication forms that are prevalent in the new

land, whereas the immigrants are perceived as having an accent. This accent “can be seen in such things as turning to the Internet for information as secondary source rather than their first source, or they will want to read the manual for a new program rather than assuming that the program itself will teach them to use it” (Prensky, 2001). Digital natives will be comfortable using neologisms. A digital native will be so familiar with the Wikipedia that they will be comfortable with the word used as a verb. A digital immigrant on the other hand may well ask what is a Wikipedia? Wikipedia is an online multilingual, encyclopedia project, which has been created by a collaborative effort of hundreds of thousands of volunteer contributors. For example one may hear a digital native say, “Just a minute, while I wiki that”. The native is implying that they will search for the topic of conversation on the Wikipedia web site, and then include information found into the conversation. What may surprise the digital immigrant is that this referencing the web site and searching for information will happen in parallel with the continuing conversation, perhaps with very little interruption of the conversation. This ability to multitask a conversation with individuals (verbal communication) and a conversation with a web site (textual communication); perhaps over a mobile device with a screen and keyboard that fit within the palm of your hand, is one characteristic of the digital native. The Digital natives are accustomed to rapid change, and perhaps even thrive within this environment. The immigrant on the other hand may cling to stagnant eddies in the flow of innovations. Innovation that may appear to the immigrant as high-tech, such as email, but be perceived by the digital native as old and tired.

In this paper the focus of emphasis is on the Digital natives and their learning styles and what this means for the digital immigrants who work with and teach these digital natives.

These digital natives, the students and youngest of the workforce today born in 1987 have never known a world that did not include the World Wide Web (WWW).

#### Four generations of the Work Place

Currently there is generally considered to be four generations in the work place. These generations are named and classified in various ways. Linda Gravett classification names the generation as:

1. Radio Babies: born from 1930 - 1945; they are characterized as conservative, loyal and fiscally responsible.
2. Baby boomers: born from 1946 - 1964; they are ambitious, highly educated, having a strong work ethic.
3. Generation Xers: born from 1965 - 1976; they are independent, resulting from dual-income families and a high rate of divorced parents, very self-sufficient.
4. Generation Yers: born from 1977 - 1990; they are accepting of differences in race, ethnicity, sexual orientation, etc., socially conscious. (Gravett, 2007).

The newest and youngest generation, those born after 1990 are the Millennials. This term to define the generation is more inclusive than the term Digital Native. It may be argued that not all the people who are in the Millennials generation are digital natives.

Other generational classification use different years to distinguish the generations, for example, Oblinger notes that Millennials are born in or after 1982 (2003). This eight year difference may be significant in some situations, however the general trend is much more important to recognize than to squabble over the details.

Oblinger (2003) characterizes the Millennials this way:

They gravitate toward group activity and social networking; they identify with their parents' values and feel close to their parents; they spend more time doing homework and housework and less time watching TV; they believe "it's cool to be smart"; they are fascinated by new technologies; they are racially and ethnically diverse; and often (one in five) have at least one immigrant parent. (p. 2)

The focus of Gravett's work is to calm the troubled waters of intergenerational communication break down in the workforce. To that if there is a generational problem in the workforce there must also be a problem in the education environment. Some examples of how the different generations are using different technologies and the internet to support this are as follows.

Generation Yers spend 12.2 hours online every week, which is 28 percent longer than the 27- to 40-year-old Gen Xers and almost twice as long as 51- to 61-year-old older Boomers. The Gen Yers are also much more likely to engage in Social Computing activities while online. For example, they are 50 percent more likely than Gen Xers to send instant messages, twice as likely to read blogs, and three times as likely to use social networking sites like MySpace. Some more eye opening results are that 41 percent of North American households now have broadband Internet access at home, up from 29 percent at the end of 2004. Seventy-five percent of North American households have

mobile phones, and almost half of them make the bulk of their long-distance phone calls on these mobile phones, and more and more household no longer have a landline phone. Forty-five percent of Gen Yers, 27 percent of Gen Xers, and 17 percent of 41- to 50-year old younger Boomers who have a mobile phone use it for data services, led by text messaging, ring tones, and games. Gen Yers, for example, are 73 percent more likely to research online and shop offline today than they were in 2004. Ninety-one percent of online households use a search engine once a week or more. For online Gen Yers and Gen Xers, Google attracts 62 percent of searchers, and 25 percent limit their searches to only Google (Forest Research,2006).

An example in my work place where there is a mixture of Baby Boomers and Gen-X and Gen-Y the younger workers are early adopters of technologies. They are very comfortable with using instant messaging chat session to exchange information, to ask questions both personal and work related. These chat sessions are real time conversations of a group in text based form. It is quite daunting to enter this space with out a guide. So much of the information stream is slang and abbreviated phrases, local conventions and even customizations to the actual chat program and command set used to conduct the sessions. There is no manual to read, no guide book; only via experience and usage will a new person be able to learn the norms of this social group. An immigrant may wonder why everyone in the room, each diligently working alone at their computer would simultaneously break into laughter. A joke or pun told over the instant messaging system is an excellent example of how connected these digital

natives are. To get the joke, one must be connected, plugged-in, in the context of the conversation that has been developing. If one is not plugged-in it can be unnerving to be the only one in the room not laughing.

Jason Frand (2000) wrote of the Information-Age Mindset. In this paper he describes ten attributes of the new students he has observed enrolling in our educational institutions.

These attributes are: computers are not technology; the internet is better than TV; that reality no longer real; doing rather than knowing it better; Nintendo over logic; multitasking is the way of life; typing rather than handwriting; staying connected is a high priority; there is zero tolerance for delays and the consumer and creator roles are blurring (p. 16)

Frand's attributes are describing the values and behaviors of these digital natives. These students value the ability to get things done in today's world, rather than the accumulation of knowledge. The industrial-age view of knowledge was set in a time when the life of information was rather long, compared to today's, the digital native's measure of information life span is months and sometimes years, not in terms of decades. In my field of software development, we see new technologies appear every month, some catch on and become the defacto-standard, however this standard will be usurped in just a few short years by a newer technology, one with greater levels of abstraction, and fuller feature rich capabilities.

#### Instructional Methods preferred by the Digital Natives

What distinguishes a Digital Native from others when it comes to learning styles? The native prefers to receive information very rapidly. They are typically processing multiple

forms of information media concurrently. Prensky said, “they like to parallel process and multi-task” (p. 2). It is telling that we use computer science terms to describe the native’s information processing techniques. For example, using email, instant messaging (IM), audio (telephone, recorded media, etc.) all at the same time is a common occurrence for many young people. They are multiprocessing information. In a conversation with a digital native, a digital immigrant might find it rude if they have a computer in front of them following an IM chat and an ear plug in one ear and talking to a coworker, but the learning path of a digital learner is such that they may be able to concentrate and do all this simultaneously.

In *Boomers, Gen-Xers, and Millennials: Understanding the "New Students"* Diana Oblinger described the learning preferences of the Millennials as tending toward teamwork, and the use of technology in experiential activities. The cooperative learning styles preferred by these new students are telling. These students are digitally connected to a large network of friends in constant communication. Although it may appear to an older person, their parents or teachers that these students are not engaged in social activities because they are not behaving as these Digital Immigrants do in social situations. In fact these students may be more social than their parents and previous generations.

Investigating the environment of the native may lead to an understanding of their preferences. A typically Millennials will have music playing on an iPod while sending and receiving SMS messages on their mobile phone and perhaps even using a computer to play a game or surf the web. Games such as Pong, Tetris, Pac-Man, etc. are simple exercises in motor coordination and pattern recognition. There is virtually no plot line, no story that evolves, and no narrative. The video games that a Digital Immigrant may be familiar with are a far cry from

the modern games -- Massive Multiplayer Online Game (MMOG). These games are full and very rich virtual worlds. The gaming industry has not stood still in the last 40 years of the computer revolution, they have led the charge. The gaming industry has pioneered the video processors of our modern computer, leading to the ability of the computer to display 3-dimensional shapes with such fast rates as to make full motion video possible on all modern computer equipment.

Used as an alternative to more traditional forms of teaching, games and simulations have been used in education for a long time and it is known that they can increase student motivation, help students retain knowledge and promote problem-based learning and have a positive impact on learning outcomes as well as motivate the students to become more engaged in their learning. An ideal environment for game playing is one where open discussion and willingness to take chances are encouraged while the educator guides the group, without rigidity, toward achieving the learning outcomes. The ability to render realistic 3-dimensional models of a virtual world has led to the ability of game designers to incorporate the player (the computer user) into the game in the form of an avatar, an on-screen representation of the user. A player may customize the avatar with clothing, hairstyles, skin tone and physique. The inclusion of an avatar in the social setting of the massive multiplayer on-line game creates a first person reality that lends itself to a fuller experience. With this higher bandwidth of communicational experience, the opportunities for leveraging this game for learning situations increase.

Many early adopters of these technologies have already recognized the opportunities for education in such virtual worlds. One of the most popular of these virtual worlds is Linden Lab's, Second Life. Second Life is a virtual world that is built entirely by its residents. It has

and an economy, virtual land and community encouraging the social networking with discussions, sports, entertainment, games, education, arts and culture, charity and support groups. Second Life has a number of resources for educators to use the virtual world as an environment for teaching.

In *Everything Bad Is Good for You*, Johnson (2005) argues that it is not the content of the video game but rather the form and structure of the game that stimulates the brain and produces the reward. “If you create a system where rewards are both clearly defined and achieved by exploring an environment, you’ll find human brains drawn to those systems, even if they’re made up of virtual characters and simulated sidewalks. It’s not the subject matter of these games that attracts- if that were the case, you’d never see twenty-somethings following absurd rescue-the-princess storylines like the best selling *Zelda* series on the Nintendo platform. It’s the reward system that draws those players in, and keeps their famously short attention spans locked on the screen. No other form of entertainment offers that cocktail of reward and exploration” (p. 38).

This “cocktail of reward and exploration” is one of the learning styles that the Digital natives have come to expect and it may be that their brains have been wired to need this level of stimulation.

Digital natives recognize that there is value in learning to play a video game, however many of their teachers will not recognize this value. This is because video games and books represent different kinds of learning, vastly different learning systems are employed by the participant. While playing a video game, and here we are discussing modern video games such as a MMOG and not Pong, the participant must learn a social network of characters their

interactions and interrelationships. They must evaluate on an ongoing basis the objectives of the other characters, and make subjective judgments of the other characters. These skills are very real world skills. This is an example of collateral learning. Collateral learning is just as important as explicit learning.

Our education systems have been based on explicit learning, learning facts and figures. These same educational systems have been heavily influenced to provide workers for the economies that support the systems. Do the economies need change faster than the educational systems can adapt? Does the modern economy of the United States, based in the information age desire workers that can site data or generate information from that data?

Even the card games of the Digital natives have elements of a social network. Where the older card games such as Harts, Rummy, or Canasta have a well defined set of rules and order of play, the more modern card games have much more complex situational rules, and include aspects of role playing games. An example of the modern card game is Bang! released by Mayfair Games.

#### Impact of the Learning Styles on the Educational Institution and Workplace

Technology and the media that children use during their formative years influence how they process information, and how they prefer to learn. Because of the fast change in technology and the ever growing velocity at which this change effects our generations the generation gap may be widening. In general, students are using technology at a much more rapid pace than their teachers, they have are already mastered and adopted into everyday use and many teachers are highly fearful of the technologies that the students take for granted.

What impact will the workplace and the classroom feel from the changing learning styles of the digital natives?

“It’s very serious, because the single biggest problem facing education today is that our Digital Immigrant instructors, who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language”. (Prensky, 2001, p. 2). It is not the role of the teacher to be a master at all the new technologies but to know about the technologies and how they can be adopted into the curriculum. It is the student job to do the work and produce things in these technologies and media. The student – teacher flow of knowledge need to go both directions, the teacher asking for help with the technology so they don’t ‘look stupid’ struggling with something the students have mastered and the teacher does what they are masters at, they need to help the student apply the technologies wisely to real problems, and to reflect and search for the deeper issues that the technologies raise, and to bring up and discuss these issues with the students (Prensky, 2007).

In designing appropriate learning experiences, teachers need to recognize that learning comes from passion not discipline and a sound learning process involves the learner’s career and personal aspirations, prior learning and experiences. “The twenty-first century is all about creating, inventing, and sharing those things with an increasingly connected world” (Prensky, 2005, p. 64).. It will take the digital natives and the digital immigrants coming together to recognize the different ways things can and will get done and create new best practices and ideas for the workplace and in education.

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