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George Bush vs. Pikachu: Students' Recognition of Famous People vs. Video Game Characters

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Abstract

Video games are part of youth culture. Recognition of game characters is a useful skill in youth culture; young people may value and develop this recognition, even if they don't play video games. In contrast, recognition of famous people is a useful skill in academic and mainstream cultures; young people may value and develop this recognition less. To test this possibility, 48 high school students were surveyed. The hypothesis, that students have better recognition of characters, was refuted. However, recognition was comparable, especially for many people and characters (e.g., George Bush vs. Pikachu). Also, data on video game habits and attitudes were collected. Possible implications for video games in education (i.e., serious games) are discussed.

KEYWORDS: video games, videogames, video game characters, educational games, teaching using games, serious games, media, social studies, survey, high school

Purpose & Literature

In a 1982 survey, Tiene asked high school students to match 20 famous people from world history with possible descriptors (e.g., Einstein, "Physicist who came up with the theory of relativity..."). In discussing the students' poor performance, he mused, "If they do not, at the very least, know these historical giants, whom do they know?" (Tiene, 1982).

History, current events, and video games all involve stories about people or characters. Young people need to recognize the actors in order to understand and discuss the stories. Recognition of famous people is valuable in understanding and discussing history and current events. Recognition of video game characters is valuable in understanding and discussing video games.

Many young people want to discuss video games, because video games are a major part of youth culture. Most or all young people have played video games at some point, and many play regularly (Jones, 2003; Rideout, Roberts, & Foehr, 2005). Marketing and other discourse about video games permeates other youth-targeted media, including magazines, television, film, and the Internet. Video game characters are the celebrities of video game culture. A character like Pikachu will appear in many video games, and often in other media (e.g., films based on games). Even young people who don't play the relevant games may value and develop recognition of such characters -- recognition they can use when consuming non-game media and interacting with other people². This recognition is undervalued in many academic settings; rather, recognition of famous people in history and current events is usually highly valued by teachers, if not by students. This suggests a possible answer to Tiene. Perhaps young people are capable of developing recognition of both famous people and video game characters, but they are more motivated to do the latter.

This is a timely issue. Some scholars are promoting video games as teaching tools, both because of their place in youth culture and their interactivity (cf. Aldrich, 2004; Dede, 1996; Elliot, Adams, & Bruckman, 2002; Gee, 2003; Gredler, 1996; Haynes & Holmevik, 2001; Jones, 2003; Prensky, 2001; Squire & Jenkins, 2003). Video games may provide immersive, educative experiences. Alas, there is little empirical research on educational video game design (Gredler,

1996; A. Mitchell & Savill-Smith, 2004). There is also growing concern, both scholarly and mainstream, about the possible negative effects of games, especially regarding violence, sex, gender, and health and fitness (Mishra et al., 2005; Palmer, 2004).

When discussing teaching using video games, some scholars and teachers may assume that young people will welcome video games into the classroom. This is a questionable assumption. The kind and quality of games will certainly matter. For example, if video games or specific kinds of games are predominantly appealing to boys, teaching using video games may actually disadvantage girls (Carrie Heeter, personal communication). The majority of video game protagonists are male. Female players may have more trouble identifying with male protagonists, and thus be less immersed in a game. Scholars, teachers, and game designers need to be circumspect about these issues (Laurel, 2001).

More clarity is needed about both the design of video games and the place of video games in youth culture. This survey-based study is a modest step. The main hypothesis was that high school students would be better at recognizing video game characters than famous people. This would support the view that young people value a familiarity with video games more than a familiarity with history and current events.

Methods³

The survey⁴ was piloted in one high school in spring 2005, revised, and then administered in a different high school in fall 2005. Both were small high schools (~600 students) in small, mid-Michigan towns.

Since video games are inherently visual, the survey asked students to identify people and characters based on headshots: photographs or illustrations of an individual's head and upper body. To design the survey, lists of famous people and famous video game characters were

brainstormed, supplemented by browsing print and web publications in history and current events (e.g., *Time* magazine covers) and game journalism (e.g., "Top 100 Games" lists). The list of people was reduced to 10 by selecting those who are easily recognized by their headshots. For example, both Marie Curie and Albert Einstein influenced science, and both Eleanor Roosevelt and Martin Luther King, Jr. influenced human rights, but Einstein and King are arguably more recognizable by headshot⁵. The list of characters was reduced to 10 by selecting those who are have appeared in multiple and/or particularly prominent games. The lists were randomly ordered. In the pilot study, some people and characters proved less recognizable than expected, and were replaced. The goal for each list was 10 very recognizable individuals.

The final people were: John Kerry; Adolph Hitler; Mahatma Ghandi; George Washington; Albert Einstein; Martin Luther King, Jr.; Abraham Lincoln; Bill Clinton; Bill Gates; and George W. Bush. The final characters were: Donkey Kong; John Madden; Mega Man; Mario; Sonic; PacMan; Lara Croft (*Tomb Raider* series); Yoshi; Master Chief (*Halo* series); and Pikachu. Most of these characters appear in games that are appropriate for "Everyone (6+)" as rated by the Entertainment Software Rating Board⁶. The exceptions are Lara Croft (usually "Teen (13+)") and Master Chief ("Mature (17+)").

Google Image Search was used to find roughly comparable pictures of each person or character. Adobe Photoshop was used to scale all pictures to the same height, while trying to crop any identifying gear or emblems (e.g., Hitler's swastika armband). Pictures were printed in color and presented in glossy sheet protectors. For people, the survey asked, "Name? Why is this person famous?" For characters, it asked, "Name? Game(s)?" and whether the student had played any games with the character. The survey also asked a few questions about video game habits and attitudes.

Data & Analysis⁷

Most students took about 10 minutes to complete the survey; a few took up to 20 minutes. Students had no explicit extrinsic incentive to complete the survey (e.g., it wasn't for a grade). Most students showed high energy and engagement (e.g., they wanted to discuss the survey). Many students spontaneously said or wrote that the survey was interesting and enjoyable (e.g., "cool," "sweet").

Demographics

The students were in one of two required 9th grade science classes, or one of two required 10th grade science classes. Many students didn't obtain parental consent to participate, so their data were not used. Data were combined by grade level of the class, but student grade level was not homogenous. Thus, the 9th Grade Group is the 26 of 45 students (58%) with consent; of these, 23 (89%) were in 9th grade, 3 in 10th grade. The 10th Grade Group is the 23 of 43 students (53%) with consent; of these, 21 (91%) were in 10th grade, 2 in 11th grade. The 9th Grade Group had a mean age of 14.5 years and was 54% male. The 10th Grade Group had a mean age of 15.4 years and was 39% male. A male student in a 10th grade class completed the habits and attitudes questions, but didn't have time to identify the characters, so the analyses of recognition don't include him.

The questions about habits and attitudes weren't revised after the pilot, so it's worth reporting these data for one group from the pilot. The 12th Grade Group is the 14 of 17 students (82%) with consent; all 14 were in 12th grade, with a mean age of 17.7 years. Recognition data won't be reported for this group, because that part of the survey was revised.

Recognition

Recognition was scored like a test. For each famous person, the correct the name and/or reason(s) for fame was worth 1 point. For each character, the correct name and/or game(s) was worth 1 point. A response was scored correct even if the other half was blank or wrong. Thus, a student could earn between 0-10 points for each list. For both people and characters, there were very few mistaken answers. Most students either wrote the correct information or left an item blank. Table 1 shows how well each group performed. On average, recognition of people and characters was roughly comparable, and male students generally performed better than female students. Table 2 shows the percent of students who correctly recognized each person or character. Several people and characters were recognized by nearly all students.

Table 1

Students' Recognition Scores

Gender	Group			
	9th Grade		10th Grade	
	People	Characters	People	Characters
Male	8.4	8.8	9.0	9.1
Female	7.3	6.3	7.6	6.4
Together	7.9	7.7	8.1	7.4

Note. The values represent mean scores. Maximum score = 10. 9th Grade, n=26; 10th

Grade, n=22.

Table 2

Students' Recognition of Each Person or Character

Person	Character	Group	
		9th Grade	10th Grade
George W. Bush		100	100
Albert Einstein		100	100
	Mario	100	100
	Donkey Kong	100	100
Abraham Lincoln		96	100
	Pikachu	96	100
George Washington		96	96
	PacMan	93	96
	Sonic	89	96
Martin Luther King, Jr.		85	96
	Yoshi	85	86
Adolph Hitler		69	68
John Kerry		81	64
Bill Clinton		73	96
	Lara Croft	69	59
Bill Gates		54	50
	John Madden	54	50
Mahatma Ghandi		35	41
	Master Chief	39	32

Mega Man

42

23

Note. The values represent percent of students who correctly recognized each person or character, loosely ranked from most recognized to least. 9th Grade, n=26; 10th Grade, n=22.

Video games are part of youth culture, so students may recognize some characters despite having never played the relevant games. This possibility was investigated for three characters. Among the students who correctly recognized Donkey Kong, 81% and 91% (9th and 10th Grade) had played a relevant game. For Sonic, 83% and 81% had played a relevant game. For Pikachu, only 64% and 60% had played a relevant game.

The main hypothesis was that students have better recognition of video game characters. This was tested using repeated measures analysis of variance (ANOVA) of individual scores on the list of people and the list of characters. Alas, no significant difference was found, by group and/or by gender. In other words, students recognized these people and characters with comparable accuracy.

Habits & Attitudes

The survey asked the following questions about habits and attitudes: (a) Do you like learning about social studies (even if you don't like the teacher, the class, or the classroom)? (b) Do you like playing video games? (c) How often do you play video games? (d) Do your parent(s)/guardian(s) play video games? Table 4 shows students' responses. Most students like social studies and video games, but not a lot. Males in the 9th Grade Group reported the greatest liking for playing video games and the highest frequency of play -- many play more than once a day. Most students play video games at least once a week. Few students' parents play video games.

Table 4

Habits and Attitudes

Question		Group								
		9th Grade			10th Grade			12th Grade		
		M	F	MF	M	F	MF	M	F	MF
Like learning social studies ^a	Mean	2.6	2.8	2.7	2.9	2.7	2.8	3	3.4	3.1
	Mode	3	3	3	3	3	3	3	3	3
Like playing video games ^b	Mean	3.6	3	3.4	3.3	2.6	2.9	3.1	2.4	2.9
	Mode	4	3	4	3	3	3	3	3	3
How often do you play ^c	Mean	3.9	2.5	3.3	3.7	1.9	2.6	3.2	1.8	2.7
	Mode	5	2	5	4, 5	1	1	4	1	4
Parent(s)/guardian(s) play ^d	Mode	2	3	2	2	2	2	2	2	2

Note. M: Male, F: Female, MF: Male and Female. 9th Grade, n=26; 10th Grade, n=23.

^a1: I hate it, 2: I don't like it, 3: I like it, 4: I like it a lot. ^b1: I hate it, 2: I don't like it, 3: I like it, 4: I like it a lot. ^c1: Less than once a month, 2: About once a month, 3: About once a week, 4: About once a day, 5: More than once a day. ^d1: Don't know/Not sure, 2: No, 3: Yes, but only with me, my brother(s), and/or my sister(s), 4: Yes, even by themselves.

Table 5 shows the percent of students with various video game systems at home⁸. The respective popularity of the PlayStation 2, XBox, and GameCube somewhat mirrors market-wide trends. Together, the PlayStation 2, XBox, GameCube, and GameBoy Advance/SP represented the current systems at the time of the survey. In the 9th Grade Group, 93% of the males have one or more of these systems, compared to 75% of the females. In the 10th Grade Group, 78% of the

males have one or more, compared to 71% of the females. These data, and especially the gender comparisons, should be interpreted as access, not necessarily use, since the survey didn't ask about the primary owner or user of the system (e.g., a brother, a parent).

Table 5

Students with Video Game Systems at Home

System	Group								
	9th Grade			10th Grade			12th Grade		
	M	F	MF	M	F	MF	M	F	MF
PlayStation	57	33	46	44	64	57	22	20	21
PlayStation 2	96	58	77	78	64	70	33	20	29
XBox	11	43	42	57	25	30	55	20	43
GameCube	36	17	27	33	7	17	33	20	29
GameBoy	50	33	42	33	64	52	33	40	36
GameBoy Advance/SP	50	17	35	33	36	35	11	20	14
Nintendo DS	14	8	12	11	14	13	0	0	0
PSP	7	17	12	0	7	4	0	0	0
PC/Windows Computer	64	75	69	67	93	83	60	60	86
Mac/Apple Computer	0	17	8	0	0	0	40	40	14
LeapFrog/Leapster	7	8	7	14	7	9	0	0	0
Internet - Dial up (Phone/Modem)	36	67	50	56	79	70	40	40	29
Internet - Broadband (DSL/Cable)	14	8	12	22	7	13	60	60	71

Note. The values represent percent of students who have the system. M: Male, F: Female, MF: Male and Female. 9th Grade, n=26; 10th Grade, n=23.

The last question was open-ended: "Is there anything else you'd like to say? (about famous people? about video games? about this survey?)" Many students responded, including: "Not all kids play video games, I don't have the time or interest." (pilot survey, 9th grade student); "Even if we know who someone is and know their contributions we don't always know what they look like due to lack of photographs in text books" (pilot survey, 9th grade student); "I believe that people who say video games are bad, just turn to that as an excuse such as bad parenting and other examples. Good survey!" (12th Grade Group); "I hope this survey proves not everyone just plays video games. We can be smart people, not just mindless video gaming people." (9th Grade Group); "All kids have played some kind of video game." (9th Grade Group); "I believe that almost all video games are a waste of time." (10th Grade Group).

Correlations

In addition to the main hypothesis, several correlations were predicted between recognition performance and habits and attitudes. These correlations were tested after combining the 9th and 10th Grade Groups, and combining some questions. The variable "Gamer" combined liking video games (question B, value=1-4) and playing often (question C, value=1-5), plus current systems (value=0-4), for a rating from 2-13. As predicted, there were positive correlations between Gamer and recognizing characters (Pearson Correlation=0.612, sig.<0.01, 2-tailed) and between Gamer and parents playing (Pearson Corr.=0.377, sig.<0.01, 2-tailed). There was also a positive correlation between recognizing people and recognizing characters (Pearson Corr.=0.444, sig.<0.01, 2-tailed), which may suggest that some students are better at recognizing faces in general. Finally, a negative correlation was found between owning current systems and liking social studies (Pearson Corr.=-0.357, sig.<0.01, 2-tailed), but not between Gamer and liking social studies. This puzzling correlation is discussed below.

Discussion

This study failed to prove the main hypothesis, that young people are better at recognizing video game characters than famous people. At least for the people and characters chosen, recognition is comparable. This is still an important result. While participation in academic or mainstream culture depends on recognizing people like Abraham Lincoln and Albert Einstein, many young people recognize Mario and Donkey Kong equally well.

The main hypothesis was based on four beliefs: (a) young people are exposed to more media with video game characters; (b) young people are more motivated to develop familiarity with video game characters; (c) young people directly interact with video game characters, but only study or observe famous people; and (d) video game characters are deliberately designed for recognition. Media exposure (a) is an obvious factor. While there are outstanding educational media (e.g., *Liberty's Kids* TV series), young people are more likely to watch/read/surf MTV and the like, in which video games are advertised, reviewed, adapted as films, etc., while history or current events are far less represented. Similarly, young people have more motivation (b) because familiarity with the characters is more useful in youth culture. Even for young people who don't play games, familiarity with video games may be useful in consuming other media and conversing with friends. Hence, some young people can recognize some characters despite having never played the relevant games. Evidently, young people are also motivated to become familiar with famous people, but perhaps the motivation is more extrinsic (e.g., grades).

Interactivity (c) is a key argument for teaching using video games. Interactivity is commensurate with constructivist and similar student-centered pedagogies; the focus is on action/agency rather than transmission/passivity (cf. Dede, 1996). Greater involvement fosters

better retention; young people may recognize video game characters because they have controlled (or even "become") the characters, not just observed them.

Character design (d) is a growing area of interest and appreciation in the games industry (cf. Rollings & Adams, 2003). For example, Nintendo's financial and critical success can be partly attributed to the quality of its characters and how recognizable they have become (e.g., Mario, Pikachu). This recognition can be designed for: Mario has an "M" on his hat, Pikachu (with its powers of electricity) is bright yellow with a zig-zag tail, etc. More importantly for educational games, a good character allows players to relate to the game better. "Good" may mean the character is charismatic, easy to identify with, and/or easy to adopt as alter ego (i.e., avatar). Character design in many games is arguably weak, especially outside the market demographic that wants to be macho and violent. However, in some cases, a character is deliberately under-defined, as a blank slate onto which the player can project his/her own personality. Other games don't depend on a specific character (e.g., *World of Warcraft*, *The Sims*), so a coherent characterization style or artistic style is more important (but harder to juxtapose empirically with photographs of famous people).

Gender is a prominent, enduring issue in video games, especially commercial, top-tier titles like those represented by the characters in this study. There are fewer female characters than male characters, especially protagonists, and they are often designed and portrayed in sexist or stereotypical ways. This may deter young women from relating to games. In this study, males were better at recognizing characters, liked playing video games more, played more often, and have more video game systems at home. This partially validates some scholars' concerns, that including more video games in classrooms may systematically disadvantage female students, at

least if such games mimic the designs of contemporary commercial games and their characters (cf. Mishra et al., 2005).

A significant limitation of this study is the exclusion of many students' data, because they didn't obtain parent/guardian consent. For example, in one class, a student didn't have consent and spent the time playing a game on graphing calculator; his data would have been interesting. There may be a correlation between remembering to obtain a parent's signature and remembering people or characters, resulting in a systematic bias throughout this study. Another concern is that some questions may have been misleading. For example, many students reported an Internet connection but no computer, suggesting they interpreted the question about video game systems to mean systems they personally own, and not just systems in their homes. Finally, the wrong people or characters may have been chosen, or young people may be better at recognizing characters in their native medium (on electronic screens). A possible follow-up would be surveying college students (who are usually old enough to give consent) via a web browser.

The most interesting but puzzling result may be the negative correlation between having current video game systems in the home and liking social studies. Social studies would seem to be an appealing subject for gamers. Games are often about visiting other lands and cultures, and many have historic content or inspirations (e.g., *Age of Empires*, *Civilization 4*). Perhaps students don't feel as transported by the way social studies is taught. The survey can't speak to this issue, but the correlation is intriguing.

This study was designed to support a model the author is developing. Connecting with students' interests and cultural literacies fosters motivation. In the model of *co-opting*, educators identify technologies and media that engage learners, and then repurpose them for teaching (Buchanan, 2003). Many educators already do this. For example, comic books are appealing to

many young people, and *Maus* is an allegorical comic book about the Nazi Holocaust. While not expressly created for education, *Maus* is used by many teachers (e.g., in conjunction with the autobiography *Night*). Similarly, if young people are already familiar with video game characters, educators should consider ways to leverage that interest for engagement. For example, Lara Croft and Katherine from *Taming of the Shrew* both challenge sexist societal norms, while Mario and Odysseus are both on perilous quests. Teachers do not necessarily need to bring the relevant games into the classroom to draw these kinds of connections; the goal is not superficially making lessons and activities more entertaining. Rather, the goal is finding or designing structural connections that foster situational interest in service to meaningful learning (Brophy, 2004; Cordova & Lepper, 1996; M. Mitchell, 1993; Schraw, Flowerday, & Lehman, 2001). "Good" characters (see above), in found or created games, is one way to forge such connections.

More broadly, educators should heed Whittington's suggestion and re-examine the role of school in privileging and transmitting certain parts or kinds of culture (Whittington, 1991). Video games do not yet have the broad cultural importance of novels or film, but they will. They already have some impact among young people, who recognize Pikachu as easily as George W. Bush.

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² Notably, characters like Pikachu may evoke negative reactions from high school students, but they have to know them to hate them.

³ The University Committee on Research Involving Human Subjects (UCRIHS) at Michigan State University approved this study. IRB# 05-054.

⁴ The pilot and revised survey instruments are available at <http://KymBuchanan.org> under "Publications."

⁵ Arguably, the gender imbalance in the final list reflects bias in the historic record, not researcher bias.

⁶ ESRB ratings for video games are analogous to MPAA ratings for films (e.g., G, PG, PG-13, R, NC-17). Retailers aren't supposed to sell or rent inappropriate games to underage customers. See: <http://www.esrb.org/>

⁷ All analyses were conducted in SPSS 14.0 for Windows.

⁸ A few students also wrote in or verbally mentioned older systems (e.g., Super Nintendo).