RETHINKING E-LEARNING MEDIA: WHAT HAPPENS WHEN STUDENT *LIKE* MEETS PROFESSOR *ME*?

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ABSTRACT

Today digital-device-outfitted Millennials comprise the majority of university students. Concern over these digital natives' tendency to perform lower than expected as a group in college after completing a commendable high school experience, has some eyeing character traits as a possible culprit. Conversely, university faculties are comprised primarily of Baby Boomers and older members who grew up in lower-tech, lesser-interactive-media environments. Higher education institutions have invested a lot of resources into facilitating the integration of digital technologies and best practices into the instructional processes, but how far has the professorial *Me* generation really advanced in comparison to our studious *Like* generation? Are we designing e-media effective enough for Millennials? This paper will analyze Pre-Millennials' text dependency and their resulting instructional media processes as a barrier to bridging the digital divide between higher-education and its incoming Millennial students.

KEYWORDS

E-learning; multimedia; media; generation; student; professor

1. INTRODUCTION

Although the birth years of any generation are not set in stone, this year many would agree that eighteen-year-old Millennials (a.k.a., Gen Y) are the majority population entering college as freshmen, with Post-Millennials only a few years behind them. The most avid users of technology, Millennials "are 'digital natives'—the only generation for which these new technologies are not something they've had to adapt to" (Pew Research Center, 2014). Our students have changed radically, they are no longer the people our educational system was designed to teach (Prensky, 2001). The characteristics of any given generation are rife with vast generalizations, often subject to conflicting viewpoints (Twenge, 2014; Koughan & Rushkoff, 2014), but a premise put forth in this paper is that we have an older generation designing and delivering instruction for a younger generation. This worked when we didn't have on-demand, instant access to information. In fact, the younger generation is now creating informational content for all eyes in the world who have Internet access. According to Beattie, Laliberté, & Oreopoulos (2016), today's youth entering college are experiencing significant dips in their track-record-proven academic productivity upon entering college. They cite non-academic character traits that make them either a thriver or diver as the predictor of college success. Divers are students whose first-year college GPA is far below expectations, have a high tendency to procrastinate, self-report cramming for exams, wait longer before starting assignments, are less conscientious, and express superficial goals. In contrast, thrivers exceed expectations, express more philanthropic goals, are purpose-driven, and are willing to study more hours per week to obtain a higher expected GPA. This isn't a novel occurrence if you reflect back upon other transition-impacting concerns that were addressed by higher education institutions including social connectedness, first-generation status, and availability of specialty-oriented academic support groups. The character-related reasons being investigated by Beattie, Laliberté, & Oreopoulos (2016) may well impact Millennials' post-secondary learning experience. I contend, however, that we also have a significant disconnect between the instructional media that works optimally for Millennials and the media experience we commonly offer in higher education. As instructors and designers of instructional content, we have to be certain that our efforts are resulting in optimum outcomes for students. Before looking at details of the instructional content it is important to compare and contrast the individuals involved in the higher education teaching and learning relationship.

2. GENERATIONAL MEDIA

The quintessential professor and Millennial student are each prolific in their consumption and authorship of media, but in their own way. The college teen is more likely to implement a selfie stick or post a YouTube video as a means of documenting his or her daily accomplishments. A professor on the other hand may be caught left-swiping a New York Times article, or agonizing over the nth text edit to his or her pending publication. For the millennial "the same brain circuits that are activated by eating chocolate and winning money are activated when teenagers see large numbers of "likes" on their own photos or the photos of peers in a social network" (Wolpert, 2016, para. 1). Current trends suggest that Baby Boomers are just as obsessed with technology as Millennials, but through different avenues. Despite popular belief, the majority of compulsive social media checkers are adults, with the highest usage observed in those between the ages of 25 and 54 (Chang, 2015). The key variance is the type of use. A Millennial is more apt to partake in text-independent uses such as Snapchat, Instagram, posting their mood on Facebook, or catching up with the latest YouTube pop culture icons' video posting. A Boomer, conversely, is more likely to partake in a text-dependent medium such as checking email during mealtime, incessantly following a Twitter thread, or monitor any number of Blogs or news feeds. Regardless of the media-type preference, or the motivation for engaging media, additional strides to close the distance between the types and design of media generational groups prefer may help students with the secondary to post-secondary education environment transition. Today's average college grad has spent fewer than 5,000 hours of their lives reading, but over 10,000 hours playing video games and 20,000 hours watching TV (Prensky, 2001). Younger adults are leading the way in increased mobility with digital devices, and take advantage of a wider range of functions (Zickuhr, 2011). Millennials' ownership of cell phones, laptops, and game consoles surpasses other generations. They are more likely to have more digital devices. Although TV is the most heavily consumed platform of all generations, digital device usage is gaining steam with younger consumers (Nielsen, 2016). In fact, Smartphone and TV-connected device usage by Millennials leaves other generations behind. As a result of the ubiquitous technological environment and the sheer volume of their interaction with it, today's students think and process information fundamentally differently from their predecessors with the differences go far further and deeper than most educators suspect or realize (Prensky, 2001). There is a failure to build a bridge between the technological world Millennials live in and the classrooms we expect them to learn in (Considine, Horton, & Moorman, 2009).

3. INSTRUCTIONAL MEDIA

Technology assets are strongly tied to the likelihood that people engage in personal learning online (Horrigan, 2016a). Higher education courses, whether face-to-face or online, require that students use these assets to access information for learning success. Greater digital readiness generally translates to higher level of use of technology in learning (Horrigan, 2016b). It isn't the digital readiness alone that facilitate higher learning gains for students. From the instructor side organization and design quality of the media being accessed by or presented to students is instrumental as well. Students transitioning to college may be avid users of digital technologies, but may have a lower media literacy quotient as it pertains to using these devices effectively in the information rich environment of college. The course related information access demands in higher education vary substantially from the PreK-12 experience. Today's teenagers bring to school a rich and different set of literacy practices and background that is often unacknowledged or underused by educators (Considine, Horton, & Moorman, 2009). Adding to the media divergence between higher-education faculty and students is the probability that any given faculty member is designing instructional media for a scholarly audience one would find at a professional conference. It is the responsibility of today's educators to build a bridge between the knowledge students already have and the content that they need to learn to be successful inside and outside of school (Considine, Horton, & Moorman, 2009). Similarly, it is important to account for the multimedia conditioning the millennial students arriving at college have experienced by designing media that aligns with their experience.

While almost all online adults age 18-29 (95%) and most of those age 30-49 (87%) watch and/or download online videos, that figure drops to 58% among online adults age 50 and older (Purcell, 2013). Younger viewers are more often drawn to entertainment related video content, whereas older viewers

gravitate toward educational videos. In the reading realm younger viewers are more likely to read for the purpose of researching a specific topic of interest than for work or school (Perrin, 2016). Students entering college are faced with substantial contrast between engaging the self with videos and readings of personal interest, and an overload of textbooks, typed instructor narratives, course management site data dumps with numerous linked media-intensive sites, text-intensive PowerPoint notes, threaded dialog, instructor generated and third-party videos, email, audio-narrated screen casts, and live-lectures.

Amidst the array of media supporting the pontification of conceptual knowledge from course to student, textbooks are a common foundation underpinning the process. The 15+/- chapter organization closely aligns with the semester model. A growing share of Americans are reading e-books, but print books remain much more popular than books in digital formats (Perrin, 2016). The main advantages and selling points for the use of e-books from the student standpoint is their rapid attainability, portability, interactivity, linked media, and various internal features such as the ability to highlight text and search for information. The instructor realizes the same advantages, but with the allure of being able to update content more efficiently. In addition to the informational textbook/e-textbook component that is potentially underpinning the course, an instructor oftentimes has access to a number of other instructional technology tools: (a) Course management system (CMS) to house digital resources; (b) Presentation delivery tools such as PowerPoint; (c) Multimedia projectors to allow the visual representation of numerous ideas limited only by the instructors' imagination; (d) Clickers to provide students with real-time interaction during a lecture; (e) Lecture capture systems such as Panopto; (f) Screen capture and Podcasting software for instructor media design; (g) Audio projection systems; (h) The Internet tapped in to unlimited information; and (i) Streaming media sites (YouTube, Infobase Films on Demand, iTunesU, etc.). Given the number of engagement tools and content-supportive media at an instructor's fingertips it is important to design media to meet the needs of our millennial students.

4. INSTRUCTIONAL MEDIA SHORTFALLS

The instructional tools are many, but our text-dependent tendencies may be limiting our progress with the tools to meet the digital natives' visual-media learning evolution. Long ago Thomas Edison purported that motion pictures will revolutionize our education system, potentially replacing textbooks (Wise, 1937). As an educational system we've integrated the use of video substantially, but it still stands as a linked media used to support print-based information. The e-textbooks have transitioned to i-textbooks to allow user interactivity (playing videos in-line with the text and performing instant searches on text), but the text is still the overarching medium with other media tacked-on to support it. In fact, this hyperlinking, or more appropriately termed "excessive" linking, has resulted in the emergence of another increasing issue, cognitive overload. As Clark and Mayer (2016) indicate, the act of doing (physical activity) can impede the process of learning (psychological activity). The high number of linked choices in any instructional set (textbook chapter, weekly CMS module, etc.) inevitably goes uncalculated with regards to the time needed by a student to follow and engage the media, and the screen space limitations of Millennials'' mobile computing tendencies. One of the most important instructional benefits provided by the portability of cell phones is their support of anywhere/anytime access to course material (Thomas & McGee, 2012). If the course materials are too complex they do not lend benefit to the mobile interface. From the optimum multimedia design principle standpoint there are a number of additional design guidelines noted by Clark and Mayer (2016) that the author of this paper noted are being overlooked in higher-education media design as well. In addition to the design principles and in light of Millennials' visual media upbringing, the vast reliance upon text-based proliferation of course content needs rethinking. Let's take a look at the contrast between the Millennials' mainstream media disposition, and the professorial instructional media to see where the disconnect lies.

One of the important, often difficult tasks of a professor is to take an enormous amount of information on a given subject and pare it down into a series of learning events manageable by a broad array of students within the allotted quarter or semester time limit. Often the course catalogs provide general guidelines for workload, such as 45 hours of work per unit in a three-unit course. As the professional who has been enthusiastically studying the course content for years it is difficult to realize how long it takes a novice student to process and internalize a given module of information. It is reminiscent of the digital native and digital immigrant relationship where one is like a native speaker, and the other frequently misconstrues meaning. Prior to the Internet, CMS, and e-books, inline instruction comprised of lecture, non-linked

textbook, and lecture notes was the mainstay of course design. This was sometimes accompanied by supplementary on-reserve library articles. After the Internet infiltrated higher education textbooks morphed into a compendium of the usual content along with numerous links to videos, websites, and volumes of other supplemental information. Rather than dial-down the content we want our students to learn, we've inflated it substantially. In addition, the presentation of the material has remained in a text-based medium rather than keep pace with the increasing visual media consumption among student generations, currently Millennials.

The e-textbook was conceptualized and made available to meet both, the spiraling costs and the increasing mobile-technology use. For the Millennial learner mobile has manifested primarily with Smartphones rather than tablets, which poses screen space limitation issues. At least one feature listed as a benefit of the e-textbook, linked media, can also be a negative point. Often there are too many linked choices and too much irrelevant information which wasn't vetted adequately for optimum benefit to the millennial learner. In order to derive the full benefits of mobile computing, the implementation efforts should be accompanied by the necessary technological infrastructure (Shim & Shim, 2001). Analysis of one similar chapter, Motivation, among three popular Educational Psychology e-textbooks (Table 1) reveals a common trend among higher education textbooks: The minimal use of non-text, content-supportive visual images.

Table 1. Textbook supplemental media occurrences within one chapter
pertaining to the topic of Motivation in Educational Psychology

	Textbook Author		
	Woolfolk	Slavin	Ormrod
Supportive Images	1	2	8
Non-Supportive Images	1	0	9
Keyword Definition Links*	47	16	43
Video Examples*	8	5	10
Web-content Link*	7	9	6
Text-based Figures	7	3	14
Self-Checks*	6	1	7
Audio Podcasts*	1	0	0
Pages in Chapter	44	24	52

Note. *Items had hyperlinks that opened a new browser tab or popup window.

Although the specifics of presentations in any given lecture will vary by discipline and subject-matter, the supportive PowerPoint presentations that textbook publishers provide for instructors (Table 2 & Figure 1) are representative of the visual support commonplace in many lectures. It is one reason why PPT has been negatively termed, *PowerPointlessness*. When considering the use of text in a presentation it is important to realize that you (the speaker) are the text. The visual image is the meaning. Aside from key words that could be misheard, subtitles for second language listeners, and youth learning to read, the use of text and narrative voice together breaks a fundamental principle of multimedia design. The *Modality Principle*, presenting words in audio rather than on-screen text, prompts significant learning gains (Clark & Mayer, 2016).

Table 2. Educational Psychology textbook supplemental PowerPoint pertaining to the topic/chapter on Motivation

	Textbook Author		
	Woolfolk	Slavin	Ormrod
Supportive Images*	1	1	2
Non-Supportive Images	1	1	1
Video Examples	0	0	0
Text-based Figures	0	0	4
Text-dominant Slides	31	18	22
Slides in Chapter Presentation	32	19	24

Note. Supportive images helped communicate information effectively.

Figure 1. Example of text-dominant slides, the most common visual in the supplemental textbook chapter PPTs

Designing and developing motion video, interactive infographics, or illustrative animations is a time-intensive, costly endeavor. Simply locating and legally accessing high definition static images that can help communicate meaning as you present is also costly and time consuming. YouTube and other media streaming sites have helped bring some noteworthy visual support to the teaching and learning process. There is still a tendency to lean on talking-head or text-invasive motion videos. This can be due to the afore mentioned constraints, and to the disconnect between prescribed multimedia design principles and the producers of media. The most successful instructional uses of video tend to come from the high-end commercially produced compilations, or the use of video vignettes as case studies to help students apply learning concepts. More often in higher education, however, the use of motion video results in Modality Principle issues (Figure 2), or in a talking head without visuals to support the points being discussed.

Figure 2. Panopto lecture capture breaking the "Modality Principle"

5. CONCLUSION

Whether students or professional, usability of a device is important in regards to educational content quality and excellence of service to users (Shin, Shin, Choo, & Beom, 2011). The Millennial students' reliance upon smaller mobile devices, and their visual media preferences warrant a rethink on how we are designing media for their benefit in higher education. Media that meets the digital natives' preferences will resonate with the media design principles and offer a visually stimulating experience for the nontraditional students as well.

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