

Teaching Generation Z at the University of Hawai'i

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INTRODUCTION

New generations of students are not the same as prior generations, and they respond differently to instruction. While the University of Hawai'i (UH) considers its mission to provide high quality education to students, it must change its ways of teaching to align to the values and learning styles of these new learners, specifically Generation Z. Teaching methods, course content, and objectives must be relevant and engaging to this new generation of learners, for the UH system to advance its mission. As explained below, Generation Zers (Gen Zers) are not only different learners, but they also have different values and goals. Thus, traditional teaching methods may no longer be effective.

Gen Zers were born between the years 1995-2010. They follow other generations, who also impacted society in various ways, such as the Veterans (1925-1944), Baby Boomers (1945-1964), Generation X (1965-1980), and Generation Y (1981-1995). Each of these groups is extremely distinct when considering values, goals, and ideals. Each new generation has been associated with various characteristics and traits that loosely define them as a cohesive group (McCrindle, 2016). These associated characteristics are based on the economic conditions, cultural norms and mores, technological advances, and world events, all helping to shape the thoughts and views of each generation.

Gen Zers will become an important generation for the university. Whether we expect the growth of entering high school students to increase or not, they still will be a large population of the college. From this perspective, the university needs to change its approach to meet the learning needs and other characteristics of this generation. This report examines the learning style and thinking process of Gen Zers, the technology that Gen Zers have adopted, the ways Gen Zers approach information, and professional development models the university may employ to effectively respond to Gen Zers.

Also important to consider is that though Gen Zers bring different characteristics and traits to our university, they are not an unconnected entity, just a product of our evolving society. Their learning needs reflect a changing world, especially in view of new technology. For faculty to have the knowledge and skills of up-to-date education technology, the university needs to be proactive in making this happen. This paper presents methods to achieve this goal.

THE CHARACTERISTICS AND TRAITS OF GENERATION Z

Gen Zers are currently between five and twenty years of age. They have been called “Digital Natives,” the “Internet Generation (IGen),” and “Screensters” since they are the first generation born in an Internet-connected environment and are extremely tech-savvy (Renfro, 2012). They are used to multimedia and various forms of technology that comprise a seamless part of their daily lives. They use various electronic devices simultaneously and/or switch between smart phones, iPads, tablets, and laptops. For example, a recent study found that more than half of teenagers do not wear wristwatches because they use their smartphone to tell time, get directions, or take a picture (Rothman, n.d.). Another source estimates that more than 52 percent of a Gen Zer’s day is spent indulging in a significant amount of “screen time” (Hawkins, 2015).

Gen Zers obtain information and answers immediately from any source available on the Internet (e.g. Wikipedia, YouTube videos, blogs, etc.), many not reliable. They are used to instantly connecting with others online, across all geographical lines, and at any hour through social media such as Facebook, Snapchat, Instagram, Vine, Twitter, etc. (Renfro, 2012). However, Gen Zers have increasingly embraced platforms that provide anonymity, such as Snapchat. They also seek social validation, but at the same time want to differentiate themselves from others causing a struggle between maintaining a personal brand via social media and resisting being defined by it (Higa, 2016).

Growing up in an always-connected cloud-based environment of data, friends, and entertainment is what distinguishes Gen Zers from generations before them. As Darla Rothman summarized in her article “A Tsunami of Learners Called Generation Z”:

How is Generation Z different from previous generations?

- They have never known a world without Internet, cell phones, or iPods.
- They are tech savvy and in constant contact with people 24/7 using Facebook or Twitter.
- They want technology that is easy to use and will solve their problems, help coordinate their activities, or provide them with relevant people or information.
- Their brains are affected by Internet use. They find answers to questions in Google and YouTube, but they lack the critical thinking skills to evaluate sources.
- They have low/no tolerance for being without digital resources.
- They have never had to use a library card catalog or rummage through shelves to find a specific book.
- They don’t use a wristwatches or alarm clocks because they use their smartphones for that.
- Instead of reading an article, they want to watch a video (YouTube) that summarizes it.
- They may never send an email: [that is “so yesterday”]. Why email when you can text, instant message, tweet or FaceBook?
- They use a texting “slanguage.” Examples: Cray Cray (when life is too crazy for one word), Probs (other generations say probably), Totes (used to show agreement—totally),

XOXOX (used to end any text. For Baby Boomers it means sincerely yours), V (very) and I (because I am the center of everything).

Gen Zers use of fast-paced multimedia technology has had an impact on their learning expectations and values in a number of ways:

First, there is a noticeable difference in the shortened attention span of these learners. This generation has been exposed to a constant stream of short segments of information and clips not more than 6 seconds including Facebook posts and you-tube videos. As described by Darla Rothman, “With online text, learners now spend about eight seconds picking hyperlinked keywords to find answers instead of reading the whole text, which calculates to 4.4 seconds per 200 words of text” (Rothman, n.d.). As a result, they often exhibit what John Raley of Harvard Medical School coined as “acquired attention deficit disorder” (Fudin, 2012). A related noticeable impact is on the ability of these learners to concentrate and focus on longer, more complex or involved problems.

Second, the use of multimedia devices has resulted in an increased development of the visual ability portion of these learners’ cognitive functions. Visual forms of learning, such as picture, video games, and videos seem to be more interesting to these learners and more effective. Rothman, again, details this observation:

Some research has shown that the brains of Generation Z (Digital Natives) are structurally different than those of earlier generations. This has nothing to do with genetics and everything to do with how we use our brains to respond to things in our environment. The brains of Generation Zs have become wired to sophisticated, complex visual imagery. As a result, the part of the brain responsible for visual ability is far more developed, making visual forms of learning more effective. Auditory learning (lecture and discussion) is very strongly disliked by this age group. Interactive games, collaborative projects, advance organizers, challenges, and anything that they can try and see are appreciated (Rothman, n.d.).

Third, Gen Zers’ easy access to information creates an expectation of instant results and constant feedback. They expect answers immediately and may often not want to spend the time to ensure the legitimacy or reliability of the sources they find (Fudin, 2012). Yet Gen Zers’ familiarity with technology has also provided them with positive traits. To this group of students, technology is not something to be feared, but an accustomed tool to embrace. Gen Zers are not afraid to try new things, experiment, or explore. They take opportunities to research whatever interests them, often online. They do not fear connecting globally with others, and are more tolerant of cultural differences (Fudin, 2012). Furthermore, Gen Zers are the “most racially and ethnically diverse generation in U.S. history with 61% being white, 19% Hispanic, 14% black, and 5% Asian.” Also, according to the U.S. Census Bureau the percentage of minorities in our society has been increasing over time from 32.9% in 2004 to 37.9% in 2014 (Higa, 2016).

Technology access and increased diversity, however, are not the only differences between Generation Z and their predecessors. There are significant cultural shifts in social norms and world events that help to shape this generation's values.

Gen Zers have grown up amid the economic decline in world markets that mark the Great Recession. They have experienced a post 9/11 world with reports of on-going terrorist attacks. They have grown up in an environment where school violence of a horrific scale is now not an uncommon phenomenon. These events have made Gen Zers more cautious and security prone. As Forbes predicts, Gen Zers will be careful with their money and debt:

After seeing their parents lose jobs and their older siblings move back home, this generation will avoid debt. They'll be diligent researchers, always considering what's a good investment, and less likely to make impulse purchases. In our study, 57% of Zs said they would rather save money than spend it immediately. Like Ys, they'll find the best deals and will expect to test out products physically or virtually before they buy (Anatole, 2013).

This research, however, also predicts that these world events will inspire Gen Zers to improve the world. They see the dark side of society and feel a responsibility to engage in action to remedy the problems and effect social change (Anatole, 2013). These students are more interested and invested in subjects and actions that they feel can immediately impact their communities (Levit, 2015), and being witness to societal hardships has led Gen Zers to embrace diversity. Younger generations (47%) are more tolerant of races and ethnic groups than older generations (19%) as per a study conducted by the Chamber of Commerce (Higa, 2016). All of these traits make for a very different learner than what colleges systems have seen before.

ASSESSING TECHNOLOGY USE IN GENERATION Z IN HAWAI'I

Hawai'i Gen Zers (n = 280) were surveyed for their technology use from a First-Year-Experience (FYE) community college program (131), three Early College program high school classes (57), four private high schools (49), a public middle school (31), and a public high school (12). All students attend schools either on the islands of Oahu, Kaua'i, or Hawai'i. Many of these students are in college or destined for college since the Early College program is "an initiative designed to allow more high school students to earn six or more college credits before they graduate from high school" (Early College, 2013). Students were born between the years 1995 and 2005 with 224 (83%) in the 16 to 21 year old range, and 47 (17%) in the 11 to 15 years age bracket.

The survey was developed by members of this PELP group and included questions such as "What social media and devices do you use?" and "What types of technology is used in classes?" Because students surveyed were from only a few public and private schools, the results may differ from the majority in socioeconomic status, ethnicity, cultural, and other factors such as low versus high technology use and types of devices being used.

Hawai'i students showed a preference for use of technology that echoed the sentiments of Gen Zers in general. In response to the question, "Where do you go to find information?" it was found that 77% of participants use the Internet, 30% use applications, and only 23% use the library. Not surprisingly, 38% of students feel it is very important to use technology to complete class work, while another 41% responded it is somewhat important. Only 19% of the 280 students surveyed indicated they had no preference or that technology was not important for completing class work, and 3% did not answer the question. Additionally, 48% responded it is somewhat important for instructors to use various technologies to effectively teach, with another 32% indicating it is very important.

Results showed that 93% of these students use smart phones, 81% use laptops, and 12% use iPod, and 9% use various tablets. 10% of students indicated they use other devices or none at all. Furthermore, of the 280 Hawai'i students surveyed, the most popular social media accessed through the aforementioned devices, in order of preference, are: Instagram (63%), Snapchat (54%), Facebook (45%), Twitter (30%), Pinterest (21%), Tumblr (19%), Vine (7%), and Google Plus + (6%). Another 18% utilize other types of social media such as Line, Musical.ly, Phhphoto, or not at all. Also, 77% of all students used three or more social media platforms, while 56% use four or more.

As Rothman (n.d.) mentioned, Gen Zers use of multimedia technology impacts their learning expectations and values. When asked the question, "What would help to increase learning in the classroom?" Hawai'i students provided various answers. However, their responses could be grouped into two distinct themes: technology-based learning and non technology-based learning. Surprisingly, for high school and college students, only 37 students or 31% out of 118 who responded to this question (192 students left this question blank) said that technology or technology-related tools would enhance their learning in the classroom. Instead, many of these students mentioned that they valued teacher-student engagement, teachers who had command over their subject areas, and interactive teaching styles. As one student commented, *"All I wish for in a classroom setting is an effective teacher who plans their classes ahead of time and who wants students to succeed. I like teachers who actually know the information they are teaching, and who can teach it to students in a way that makes learning easy and enjoyable. The worst possible thing that can occur in a classroom is having a teacher who does not put in the effort to teach students. It makes for wasted time and money. Technology and resources don't mean anything unless the teacher is effective and fully capable of their job and engaging students (FYE college student)."*

In regards to their younger counterparts, 100% of middle school students stated that technology would help to increase their learning in the classroom. Comments such as *"the use of technology should be encouraged because nowadays, technology is a major part of life and everyone uses it," "using computers to do work," "workshops for teachers to learn how to use technology or understand games like Minecraft to help us learn,"* and *"if we did more projects or worked in groups/partners with technology activities"* were received. Also, laptops, PCs, videos, PowerPoint, Smartboards, projectors, speakers, visual teachings, and online games were mentioned in the surveys. However, middle school students also wanted their teachers to *"not only favor certain students," "be nicer," "not pick on students all the time," "not yell,"*

“explain a little better and clearer,” “pay attention when students raises their hand,” and “be fun.”

Thirty-six percent (76 students out of 213 students) who responded to this question also inferred that active participation was preferred over passive listening/lectures. Hands-on activities, group exercises, interactive activities, and field trips were notably mentioned as tactics that would increase learning in the classroom.

While only a small percentage of high school and college students stated the need for technology to enhance their learning, they still felt that it was fundamental for teaching and learning the content of their courses. Similarly, their younger counterparts of middle school students stressed the importance of using technology to foster their learning and the need for teachers to utilize technology in their teaching. Nonetheless, the above quotes indicate that instructors should also possess skills to engage, interact, and communicate effectively with students without relying simply on technology. This solidifies our approach to professional development for faculty (introduced in the next section). Faculty must bring to the classroom a repertoire of knowledge and skills to keep the attention of Gen Zers, who are prone to boredom easily and quickly. Furthermore, the data from public and private schools across Hawai`i reveal that this is not a phenomenon occurring in isolation in certain schools, but across a whole generation of students. It also demonstrates that students at private schools share the same sentiments as those from public schools; and confirms that having access to technology is not a factor. Overall, the results from this survey indicate that professional development for faculty, particularly in higher education, is essential to responding to the learning needs of Gen Zers. However, the fact that effective teachers bring much more than their technological knowledge and skills to the classroom must continually guide us.

FACULTY and GENERATION Z: PROFESSIONAL DEVELOPMENT

One of the greatest challenges facing higher education is the digital knowledgeable students being taught by faculty who use limited technology. The traditional approach of didactic lectures and blue-book exams is not how Gen Zers want material presented to them or to be tested. There is no doubt that faculty must be prepared and equipped to teach using an array of software, hardware, digital tools, technological platforms, and social media. They will need professional development to support them to move from a traditional approach to a transformational learning and teaching model.

The learning needs of Gen Zers include Rothman’s (n.d.):

- Fast delivery of content, data, and graphics.
- Kinesthetic, experiential, problem-solving, hands-on activities.
- Speed, convenience, and finding short cuts to obtaining information.
- Integration of interactive multimedia.
- Multi-tasking.
- Instant feedback, clear goals, challenges, rewards, and positive reinforcement, as found in video games.
- Delivery of learning in small “bites” or little chunks.
- Trial and error approach.
- Problem solving assignments and exercises instead of memorizing.

- Working in teams/small groups.
- Engagement in creativity and collaboration, whether it is spontaneous or structured.
- Flexibility to learn in the way that works best for them.

There is no clear cut or “magic” answer to teaching Gen Zers. Researchers are still discovering the nuances and idiosyncrasies of this generation of students. Albeit, there are common themes of teaching strategies that are effective in engaging Gen Zers in learning in the classroom and beyond. This section introduces five of them to help faculty prepare for the challenges and changes steadily permeating the higher education arena.

Go with the flow and go virtual. Faculty who are willing to flow back and forth between providing information and allowing students to work on assignments or projects collaboratively via technology helps Gen Zers to maintain longer attention span, interest, and engagement. Gen Zers are not in tune with traditional, passive instructional sources, like printed textbooks, nor do they have the patience for long, drawn out explanations of concepts and theories.

“Volumes of dense static learning content are increasingly out of touch with the modern, real-time enterprise because young people’s learning practices last for only a moment, like a live news ticker running across the bottom of a television screen (Hendy, 2014).”

Therefore, providing information in small “bites” at a time supports Gen Zers learning. Does this imply that faculty need to become a “live news ticker?” No. It does mean that faculty need to generate ideas about how to motivate and engage Gen Zers in learning for longer period of times and extend their attention and focus on assignments/projects that require more than the few seconds that they take to read and intake information. Students read less than 20% of text and only spend 4.4 seconds for every 100 words on the page (Rothman, n.d.), which is obvious that the traditional reading assignments are not going to engage them. Thus, flexibility, but more importantly, being comfortable with flexibility, is very critical when it comes to thinking outside of the box or putting aside conventional ways of teaching to support the learning of Gen Zers.

Gen Zers reach for a smart device every 7 minutes (Styring, 2015). Gen Zers want information constantly and immediately. They are impatient and are accustomed to finding information at warp speed; and thus may find the traditional instructor’s slow pacing of delivering information to be an annoyance rather than an advantage, especially if they are constantly seeking short cuts to obtain information and achieve results. They expect answers immediately (Fudin, 2012). According to Schawbel (2014), this is why faculty should “go virtual” by incorporating collaborative assignments or in-class activities on virtual environments, which works best for Gen Zers. However, faculty should not make virtual environments the sole avenue for instruction and learning; facilitation of critical thinking and reflection by faculty is critical to the process of learning. For example, *HumanSim* provides students at Duke University, who are majoring in the medical/healthcare fields, with an engaging, experiential way to refine critical skills in a realistic, challenging, immersive environment (Duke Human Simulation and Patient Safety Center, 2013).

With instructor-guided curricula, discussions, encouragement, reflection, and training, *HumanSim* helps to facilitate learning. Individually or in groups, college students can learn by doing and train to proficiency under risk-free conditions that may be otherwise fatal in real-life. *HumanSim Anesthesia* is one of two newest additions to this virtual environment, where students take on the role of anesthesiologists and administer anesthesia to patients, monitor the patients' breathing, blood pressure, blood flow, and heart rate and rhythm, and track the progress of various drugs, gases, and agents through the patients' cardiovascular, respiratory, digestive, and other systems of the body.

“Going virtual” allows Gen Zers to disengage quickly from anything ‘boring’, like slow-paced lectures or memorization assignments, and to re-engage just as quickly if it becomes worthwhile. This can be easily incorporated in a class period, since in today’s world; content can be accessed through technology anywhere, and often in very visual, engaging forms. But, this can also pose a challenge for faculty who do not see the value of virtual platforms and are not willing to give up part of their class time for collaboration. Finding creative ways of embracing technology inside and outside the classroom will make it easier for Gen Zers to flourish in college. Nonetheless, it is important to note that technology should not marginalize or replace faculty in the classroom. Students want faculty in the classroom since they are the experts of their disciplines and field of studies and are critical to facilitating discussions and applications of the content at hand.

Tap into your “rock star” qualities. Successful faculty, like rock stars, have the natural ability to incite students’ passion, captivate their attention, and intrigue their minds. A rock star “seamlessly exploits the affordances of digital tools, weaving them into their highly interactive and unpredictable performances” [1]. Faculty can utilize today’s technology to work in their favor. Fortunately, faculty do not need to know every technology tool or platform that exists, but like rock stars, they need to know what technology makes Gen Zers “tick” or “pulse” or keeps their attention “plugged in” long enough so that this generation of students can discover, think, inquire, collaborate, participate, apply, experience, and learn. Examples are interactive games, collaborative projects, advance organizers, and challenges. Additionally, bringing game design and game theory into education allows faculty to connect with Gen Zers, as facilitators or guides. For example, *Planet Oit!*, an on-line, highly interactive, multi-player game with a challenging, behavioral reinforcement, goal-oriented scoring system, which was originally developed for high school students is gaining popularity with college undergraduates. At Wright State University, undergraduate science students collaborate in teams to use the 40 instruments, tools, and equipment available to perform tests on the samples they find before reporting their results back to Earth. In this game, teams apply the concepts and principles of physical geology, as interplanetary explorers, in a geophysical space where geological regions (desert, mountains, plains) in over 50 locations, contain plausible phenomenon (mesa, playa, cave) which are populated with an estimated 200 plausible objects (outcrops, boulders, veins) with nearly 100 rock and mineral types (Science Education Resource Center, 2015).

McCrindle’s (2016) book, *The ABCs of XYZs*, attests to the capacity of rock stars to mesmerize young fans for hours at end. He further states that faculty should pay closer attention to how rock performances easily incite such fans to actively participate rather than to be a passive observer.

“Much of the performative excitement is generated through special effects that are designed to engage most of the senses most of the time. Concerts, needless to say, are relentless in terms of activity, with multiple things going on at any one time and multiple identities performing in multiple ways, including the audience (Schawbel, 2014).”

Faculty need to figure out and architect new and exciting ways of learning and doing that are “hands on, minds on” that teach students to rigorously seek and apply knowledge beyond their potential and not just rely on what is taught (McWilliam, 2015). Seely (2006) ten years ago called this “learning to be” rather than “learning about.” Today’s learners are a multi-modal generation and therefore demand teaching styles that engage multiple channels of learning. This new generation of students identify themselves as creative intellects and problem solvers but only if they can see the relevance of the subject as it relates to their everyday lives. They thrive on relevant, applicable, active learning and project-based tasks. An example is *Second Life*. While this is not a new virtual platform, universities and colleges are increasingly using it to teach critical, life-saving skills such as those needed in a “code red” or “code blue” situations in hospital settings, as well as a cost-effective means to training. Independently and in collaborative teams, college students at Tacoma Community College were placed in various 3D environments and their mission was to identify, analyze, and respond a number of life-threatening situations (Miller, 2016). Students applied the knowledge that they learned in previous lectures to problem solve and resolve each situation successfully. Additionally, Bethel University in Minnesota and the University of Wisconsin use *Second Life* for their Bachelors in Nursing Program; and North Carolina State University integrates it into their undergraduate management courses (Nelson, 2016). According to Chau et al. (2013), students using 3D virtual platforms to engage in their learning received higher scores on explaining abstract concepts, analyzing issues, generating solutions, and utilizing accurate applications.

Surrender the soapbox. Lectures and independent/isolated work are steadily becoming dying methods of instruction. Given the characteristics of Gen Zers articulated in the first section of this paper, the faculty member who prides him/herself as a “sage on the stage” will undoubtedly pose a real problem with this generation of students. Similarly, the approach of giving students independent work that heavily reiterates what was covered by the “soapbox” lecture or involving the completion of printed exercises and problems will put this generation to sleep. These types of teaching methods have been coined by Bowman (2001) as “death-by-lecture” and “death-by-worksheet.” As Pink (2006) has pointed out that the soapbox and isolated learning methods are no longer passports to the capacity to learn and the key to future success that it once was. One of the ways that Gen Zers learn best is through “chunking” of information as opposed to a long-drawn out lecture. They prefer to engage with a community of learners of shared interests using interactive multimedia. Thus, teaching Gen Zers must move beyond the one-way depositing of knowledge and the routine of individual work, to collaborating with faculty and working and connecting with learners of shared interests, locally and globally. This is what motivates and engages them in learning. This works well because this generation of students feels a responsibility to take action, remedy the problems, and effect social change. These students are interested and invested in subjects and actions that they feel can immediately impact their own communities and communities around the world (Anatole, 2013; Levit, 2016).

For example, students at the University of Southern California teamed up with students from four other universities from across different countries via *iPodia* (not a new technology, but an innovative adaptation of the present distance education technologies) to collaborate on working toward solutions to global issues. One of the project teams was assigned to “*leverage cultural differences to inspire novel innovation targets and come up with practical means to improve the greenness and sustainability of university campuses across the globe* (Liu, Lu, & Ragusa, 2014, pg. 13).” *iPodia* provides students a unique opportunity to validate, exercise, realize, and demonstrate what they have learned from lectures, discussions, and cross-cultural exercises. Through this innovative adaptation of current technology, students were able to experience rich, meaningful, intensive, and extensive cross-cultural virtual teaming collaborations, which are otherwise difficult to acquire in traditional, lecture-styled courses in higher education.

It is clear that technology can be used to advance learning. But the question is “How can this be done with little professional development or training for faculty?” Fullan (2013) proposes a solution that does not “cost a single penny.” His “student labor” approach involves students teaching faculty about technology, students helping other students who may be digital natives but face a digital divide; and in doing so, they deepen their own learning while experiencing. This new learning relationship between faculty and students, which is introduced next, will require a markedly shift in mindset and pedagogy.

Meddle in the middle. In this very complex landscape of teaching Gen Zers, faculty need to shift their mindset and role of “sage-on-the-stage” to “meddler-in-the-middle.” In the meddler-in-the-middle teaching approach, the faculty is learning and doing, making mistakes, and engaging in trial and error, alongside students. Faculty are no longer spending much time moving from desk to desk, monitoring distracted students, or hovering over aloof students. Meddling deviates from the traditional roles of instructors and students to co-partners in teaching and learning. Student-faculty partnerships are defined as a “collaborative, reciprocal process through which all participants have the opportunity to contribute equally, although not necessarily in the same ways, to curricular or pedagogical conceptualization, decision making, implementation, investigation, or analysis” (Cook-Sather, et. al., 2014).

McWilliam (2015) points out that the meddler-in-the-middle spends:

- less time giving instructions and more time on being a useful but “naive” team member in the midst of active learning;
- less time being a risk controller and more time being an experimenter, risk-taker and learner;
- less time being a classroom auditor and more time being a designer, editor and assembler of challenging tasks;
- less time being a “sage on the stage” and more time being a collaborative critic and authentic evaluator; and
- less time on focusing on grades and more on the achievement of personal bests.

This approach and shift in pedagogy will present a challenge in higher education. How do faculty and students work together, side-by-side? To answer such a question warrants a significant transformation in the deeply rooted power differentials that permeates throughout

academia. Faculty need to acknowledge that students possess great ideas about how teaching can be improved to increase their engagement in the classroom. Students need to recognize that faculty have extensive knowledge and experience in their field of studies. When this happens, the willingness to share opportunities of learning and two-way exchanges of intellect will transpire. This is not easy. Doktor (2016) suggests that faculty take simple and small steps and start by collaborating with students to:

- Design in-class activities including participation requirements;
- Create course assignments along with grading options;
- Teach course topics using engagement techniques;
- Develop assessment rubrics with clear expectations of “success;” and
- Implement course lectures with interactive components.

In conclusion, “meddling has powerful implications for what ‘content’ is considered worthy of engagement, how the value of the learning product is to be assessed, and who the rightful assessors are” (McWilliam, 2015).

Revalue the notion of “play.” Traditional teaching practices, the unyielding educational systems, and the long-established, conventional expectations of higher education administrators, students’ parents, Board of Regents, and legislators are obstacles to meeting the teaching and learning needs of Gen Zers. College and university faculty will need to revalue the notion of “play,” reexamine what it means to today’s students, and reintroduce into their classrooms. Kane (2004) defines play as the “dominant way of knowing, doing and creating value in the 21st century.” If we embrace Kane’s definition, then higher education institutions and faculty will need to “play,” and create educational milieus where students can once again be curious, energetic, creative, dynamic, synergistic, imaginative and fearless in the face of an unpredictable, competitive, fast-paced, technologically-demanding, emergent world. For example, faculty can start by awakening the curiosity, creativity, and imagination of Gen Zers, and asking questions such as: ‘How would you explain biotechnology to Shakespeare?’ The inherent value in such a question: (a) moves faculty away from their expertise within their disciplines, (b) is not researchable on Google, and (c) elicits a multitude of ingenious interpretations and responses. In this instance, “play” combines two conflicting concepts to create an unforeseen erudition, activating, engaging, and building upon the innovative capacity of Gen Zers (Egan, 2008).

Gen Zers are changing what happens in teaching and learning in higher education. There is a government mandate to increase graduation, transfer, and degree completion rates, faculty ingrained in traditional teaching practices and conventional ways to deliver instruction will easily fall into the mode of “teaching to the test.” Gen Zers, while they prefer active, participatory learning, their characteristics of wanting things done speedily, and continuously trying to find and take shortcuts (Rothman, n.d.), may put them in a quandary. They may comfortably become passive consumers of their education. “Quickly and precisely tell us the five key points that will be covered on tomorrow’s exam so that we can pass it.” It is our responsibility as faculty to not let this happen. Thus, faculty must meddle-in-the-middle in ways that continually ignites the curiosity of the engaged Gen Z learner; stand up against bureaucratic demands; and possess a repertoire of new technological skills (introduced in the next section) to teach and engage this student population so that they can learn.

TECHNOLOGY USE PROFILE

“Being hands-on or using interactive devices is the best way for me to learn. Technology is important to use because it keeps you current with our daily lives” - Younger male teen (BNCollege.com, 2015)

Devices and Computers: Gen Zers prefer handheld multi-functional mobile devices with the ability to watch a video, snap a photo, connect to the Internet, play games and listen music (Renfro, 2012). According to an Educause report *Undergraduate Students and IT, 2014*. Of those polled, while 90% owned a laptop, 86% owned a smartphone and 47% owned a tablet. Interestingly the reports states that 7 out of 10 students use a laptop in class compared to 59% using Smartphones and 35% using tablets. While the consumerization of mobile devices is prevalent with Gen Zers, there seems to be a slight preference for using laptops in the classroom over smartphones and tablets.

Information Access Anytime Anywhere: Unlike previous generations, Internet search capabilities at your fingertips is as natural for Gen Zers as using a remote control to find your favorite TV channel. The problem, as teacher and author Erica McWilliam states:

“They (Gen Zers) are more likely to go for the quick answer than check the reliability of information and this creates challenges for their teachers. What counts as brilliance in their multi-player, problem based game world is not aligned with what is assessed and rewarded in formal schooling.”

This generation takes for granted the amount of data they have access to and the speed at which they can get it - which is a natural part of their lives (Renfro, 2012). Gen Zers think little about how search engines can sort through petabytes of information in just a few seconds.

Social Media: The term “Digital Native” is often associated with Gen Zers as they were first generation to grow up with smartphones in their hands and ready access to the web, blogs, chats, pins, tweets, music, photos, videos etc. Social Media is not only the #1 reason for Internet use by Gen Zers, but it has allowed them to keep in touch with their friends with a platform to support causes, seek answers and to have a voice. “Likes” matter to Gen Zers when it comes to their online presence and products so the quest to accumulate “likes” and/or to master games can take up much of their time and attention (McWilliam, 2015).

TRANSFORMATIVE TECHNOLOGIES

“Today’s undergraduates want a mobile-friendly, highly personalized, and engaging LMS experience.” - ECAR Undergraduate Students and IT, 2014

Learning Management System (LMS) is a comprehensive suite of teaching, assessment, analysis, reporting and collaboration tools for online learning, course management and program administration. An LMS is considered a critical tool used at 99% of all higher education institutions providing the ability to extend their reach to learners across the world

(ECAR, 2014). At UH, our LMS is built on an open source platform and aptly named Laulima which means “cooperation or working together” in Hawaiian. Laulima is widely used for traditional, hybrid and online courses administered by instructors and lecturers across all UH Campuses and Community Colleges.

LMS’ are highly adopted by faculty and students yet advanced features for teaching and learning are seldom used or not used at all (ELI, 2015). One possible reason for this underutilization is the current LMS architecture is based on a one size fits all assumption about teaching and learning (ELI, 2015). As a result, analysts believe there will be a shift from all-in-one LMS solutions to a suite of applications satisfying specific needs of the learning environment supporting personalization over standardization for learning.

Dubbed as the Next Generation Digital Learning Environment (NGDLE) by an Educause report, the new LMS will be defined by several characteristics in a learning ecosystem (ELI, 2015).

- Confederation of IT systems following a “Mash-Up” model
- Full adherence to standards for success
- Personalization instead of uniformity and centrality
- Will resemble cloud-like space for interconnectivity between systems and devices

With this evolution in LMS design, instructors can start to look at a core set of functionality in one institution wide system with “best-of-breed” technologies strategically incorporated into the online or hybrid learning environment.

Massive Open Online Courses (MOOC) provides courses of study for free to anyone with a computer and steady Internet access. Through instruction videos, self-directed learning, MOOCs are designed to reach hundreds if not thousands of participants across world. MOOCs originated in Canada and made its way to the US in 2011 with Stanford University offering the *Introduction to Artificial Intelligence* course led by instructor Stephen Thaur later that year to over 160,000 students from 190 countries. According to Kevin Carey of the Chronicle, many who participated in Thaur’s MOOC did not finish but there were some who equally or out-performed their fellow students taking the same course on-campus in Palo Alto. Carey also foresees a time when MOOC programs will be widely accepted by accredited universities and colleges and used for marketing and building enrollment.

While online models are challenging universities to assess how traditional classrooms will be used in the future, MOOC provider edX CEO, Anant Argawal said in a 2014 U.S. News article:

"In blended classrooms, the on-campus university course can leverage the power of MOOCs to free up classroom time for interactive collaboration and discussion, testing and problem-solving,"

The results of edX’s course at San Jose State University were positive as well as more students passed the same course online using the MOOC model than those taking it on-campus and in-class (Haynie, 2014).

Gamification: Innovative ideas are causing a shift in the learning environment such as “flipped classrooms, simulations, serious gaming” that is changing the paradigm of higher education (Mintz, 2014). Gamification in education uses video game design and elements to motivate students to learn. This innovative approach started to gain traction and attention over 5 years ago and is seen a viable alternative for teaching. Students taking “gamified” courses are increasingly motivated, and stay engaged and remember more of what they have learned. Instructors at different schools are beginning to see gamification as an effective way to reach online students as interest is retained and personal interaction is limited or absent (Friedman, 2016). There are favorable and cautionary opinions for incorporating the gaming model into teaching but according to Pew Research Center Study, “*Generation Z will spend 30,000 hours gaming before they are 20 years old.*” Although it will be sometime before we can truly determine the impact of gamification in higher education, the gaming lifestyle of Gen Zers offers an opportunity to explore if “gamified pedagogy” can be a solution for student initiative, involvement and commitment (Carnes, 2014).

FACULTY PREPARATION FOR GENERATION Z

To generate change that addresses Gen Zers’ unique characteristics and learning preferences, faculty must adapt to new methods of instruction. Adequate training of faculty to use new software, new programs, and new hardware is essential. Just like this new wave of Gen Zers, faculty must learn, not from reading a manual or hearing someone talk about it, but by working with the technology, acclimating to it, and eventually embracing it.

However, there are issues that need to be considered and addressed to be able to incorporate new technology into our teaching:

- 1) Instructors prefer to stay with their old methods and rarely take the initiative to learn something new. Faculty members are more comfortable with methods they are familiar with.
- 2) Many resist adopting technology such as moving to online exams from antiquated card scanners, transferring to the Laulima grading tool from printed records, converting to PowerPoints from paper handouts, or moving to electronic submission of papers from printed copies.
- 3) Some instructors have difficulty dealing with simpler technology, such as classroom equipment or programs commonly used by students.
- 4) When training is offered, instructors do not attend because they do not understand how it can help them or why there is a need for change.
- 5) Instructors who are not technology inclined tend to stick with costly textbooks instead of online materials available from libraries or websites.
- 6) Although the Information Technology groups are keen on providing new software and hardware to help faculty teach, it takes a long time for faculty to adopt them.
- 7) Faculty may just be scared of technology.

Properly preparing faculty to successfully teach Gen Zers may also include the following challenges:

- 1) New hardware or software provided to faculty is not accompanied by appropriate and adequate training.
- 2) A few faculty members in a department may be trained, but they do not feel they have the time or proper resources to train others.
- 3) Faculty might learn about new software or hardware, but cannot make the connection for effectively applying it to their classes.
- 4) Because of steep learning curves, instructors do not want to spend time learning new software or hardware.
- 5) Many times technical experts are unavailable or unwilling to conduct training, and if they are willing to train, they may not understand the best approaches for instructors in the classroom.
- 6) Although Information Technology on campuses has dedicated staff to work with faculty, changes have not been forthcoming as desired. One issue is that faculty are unaware of what technology is available that could be used. IT staff too may have difficulty figuring out what technology, amid a plethora of new developments, would be the most useful and cost-effective.
- 7) When new hardware or software is implemented, the training provided by outside contractors is often costly and limited. Unfortunately, too, all faculty are rarely available for training on certain days and certain times.

The following are possible solutions for bringing faculty up to speed with meeting the learning needs of Gen Zers:

- 1) **Provide assigned time to a teaching faculty for the purpose of training others in workshops and one-to-one sessions to implement new technology.** The advantages of this approach are
 - a. Faculty members will know how the technology can be implemented in their disciplines.
 - b. Faculty members will use the technology for their own classes, so they will be able to provide examples as well as smooth out any kinks in how this technology is used.
 - c. Faculty tend to feel more comfortable learning from other faculty. Thus if faculty prepare written guidelines, then directions may be clearer to other faculty.
 - d. Faculty in the department will have a go-to person for technology questions, minimizing calls to the technology group.

When campuses have to cut courses because of low enrollment, they may be able to assign a willing faculty to work with the technology in lieu of teaching a class. This initiative could avoid added cost to the campus.

- 2) **Organize a system-wide Teaching Technology Day at which faculty can share their unique ways of using technology in classrooms.** The one-day event might start off with a speaker and then break off into workshops. The advantages of this event would be

- a. Faculty are more likely to learn teaching technology when they can devote a day to it, rather than trying to make time during their daily routines.
 - b. The focus of the event is on teaching with technology, so attendees will come expecting to learn from the workshops.
 - c. Faculty tend to have interest in how other faculty teach and what methods they employ.
- 3) **Gather together IT personnel and instruction designers from the system to share ideas and come up with new approaches for the campuses.** The advantages of this are
 - a. The UH system can work on improving instruction technology as a whole, instead of each campus attempting to do separate approaches. It is easier to work together than separately.
 - b. All the instruction designers can learn from each other. Each of the designers can bring the perspective of his or her campus.
 - c. The discussions could help prioritize implementation of technology for all the campuses.
 - d. Collaborative efforts can be made to assess and remedy any resource challenges to providing professional development opportunities system wide.
- 4) **Incorporate short technical workshops to be part of scheduled departmental or other regular meetings.** The workshops can be on discrete technology tools, such as how to use the grade book in Lualima or how to use Google Classroom and can be taught by IT or a willing faculty member with knowledge. For this option to work, the campus administration would need to play a role in endorsing it. The advantages of this are
 - a. Most departmental faculty attend these meetings so it provides a good opportunity to train many on technology.
 - b. A number of workshops can be held because departmental meetings occur often during the academic year.
- 5) **Provide incentives for faculty to attend workshops and integrate technology into their instruction.** An incentive may be the promise of new classroom software, equipment, or device. This approach can work in conjunction with other solutions or could be a “last resort” strategy.
 - a. Faculty tend to be willing to do something if they think they can receive something concrete in return.
 - b. The strategy could include time off from teaching or overload pay as an alternative to new classroom tools.
- 6) **Adopt a faculty-student collaborative strategy for professional development and hire student workers to assist training.** Provide rich learning opportunities for students by allowing them to teach technology commonly used by them and their peers to faculty members. The students should be mentored by a staff or faculty member on their campus. The advantages of this approach are
 - a. This represents a significant investment in our students and provides opportunities to acknowledge their expertise in the area.
 - b. It is more cost effective than hiring staff personnel.

- c. Faculty are respectful of students and are likely to be receptive to the information they present.
- 7) **Develop online instruction that focus on teaching faculty how to integrate technology into the classroom.** Being a multi-island educational system presents significant challenges to ensuring equity in training and professional development opportunities for all employees. This approach provides advantages in the following areas
- a. Accessibility to training across all islands and campuses.
 - b. The self-paced nature of online instruction provides the flexibility for faculty to select when and how they engage.
 - c. Consistency in the types of technology being recommended and strategies for incorporating them in the classroom.
 - d. With the right software, there could be no limitations on the number of participants.
 - e. Eliminates the need for travel funding.

Further considerations:

- 1) For a campus to make major strides in changing its instruction methods there must be buy-in and promotion from administration. Faculty must be convinced that we must change the modes of teaching to best educate Gen Zers. If we are not teaching students the way they learn, we are not educating them properly.
- 2) When new technology is introduced, the software or hardware needs to be available to the target faculty. Otherwise, they will be learning something they cannot use.
- 3) If faculty members become trainers, system-wide workshops should be held to inform them of new technology, unless a Teaching Technology Day is organized.
- 4) If faculty members become trainers, they must adhere to a plan and assessment.
- 5) IT personnel and instruction designers cannot overlook the importance of training faculty for both new and current technology.

CONCLUSION

The University of Hawai‘i is facing a new generation of students who have unique learning characteristics. These Gen Zers have a shorter attention span for learning, use multimedia for learning, and require instant results and constant feedback. To adjust to the needs of these students, the university must move from its traditional method of classroom instruction and incorporate new teaching technology.

This change is unlikely going to occur without a concentrated effort to train faculty to use new software applications, new hardware platforms, and new teaching methods that support the way Gen Zers learn. Faculty need to understand why the changes are necessary, what is required to do, and how to do it. Faculty must become accustomed to the technology to be able to implement it into their teaching. Nonetheless, to develop a well-rounded professional, training must also integrate affective, “high touch” skills, which goes along with "the meddler in the

middle" approach, "re-visiting the notion of play", and utilizing "rock star" qualities that do not rely solely on using technology in the classroom.

This project group realizes the importance and scale of this issue and recommends the following possible solutions:

- Assign time for teaching faculty to train others in workshops and one-to-one sessions to implement new technology.
- Organize a system-wide Teaching Technology Day so faculty can share their unique ways of using technology in classrooms.
- Gather IT personnel and instruction designers from the system to share ideas and come up with new approaches for the campuses.
- Incorporate short technical workshops to be part of scheduled departmental or other regular meetings.
- Provide incentives for faculty to attend workshops and integrate technology into their instruction.
- Adopt a faculty-student collaborative strategy for professional development and hire student workers to assist training.
- Develop online instruction that focus on teaching faculty how to integrate technology into the classroom.

We encourage the university to move forward in executing these solutions system-wide, as it aligns with and supports the achievement of the following UH System's Strategic Directions (2015):

High Performance Mission-Driven System (HPMS):

- to ensure UH's ability to provide a diverse student body throughout Hawai'i with affordable access to a superb higher education experience in support of the institutional mission of the university;
- to achieve higher performance a strategy will include: providing a diverse student body with exploration and implementation of new instructional approaches;
- to provide professional and leadership development for UH faculty and staff;
- to expand student-centered distance and online learning to create more educational opportunities through use of technology; and
- to nurture instructional innovations and institutionalize high impact educational practices.

21st Century Facilities (21CF):

- to modernize facilities to be supportive of modern practices in teaching, learning, innovation, research and scholarship.
- to support 21st century higher education expectations and practices the university's facilities must be fully digitally enabled, and supportive of deep collaborations with partners across the state, nation and the world.

This project group appreciates the opportunity provided by the President's Emerging Leadership Program to research this issue and would be willing to participate and contribute to helping the university prepare for the new Gen Z students.

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