Teaching Generation Z at the University of Hawai‘i

Christine Chun, Office of the Vice President for Community Colleges, University of Hawaii, USA
Kelley Dudoit, Moloka‘i Education Center, University of Hawaii, USA
Shirl Fujihara, Kapi‘olani Community College, University of Hawaii, USA
Mariana Gerschenson, John A. Burns School of Medicine, University of Hawaii at Manoa, USA
Ann Kennedy, Kaua‘i Community College, University of Hawaii, USA
Brad Koanui, University of Hawai‘i - West Oahu, University of Hawaii, USA
Veronica Ogata, Kapi‘olani Community College, University of Hawaii, USA
Jeff Stearns, Honolulu Community College, University of Hawaii, USA

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Abstract
New generations of students are not the same as prior generations and they respond differently to instruction. The University of Hawai‘i must change its ways of teaching to align to the values and learning styles of these new learners, specifically Generation Z (Gen Zers). Teaching methods, course content, and objectives must be relevant and engaging to this new generation of learners.
Gen Zers were born in 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. These associated characteristics are based on the economic conditions, cultural norms and mores, technological advances, and world events.
Gen Zers will become an important generation for the university. 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. 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.

Keywords: Media, Technology, Teaching methodology, Student surveys, Faculty surveys

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 several 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: "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).

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 the authors 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. Of the 280 students surveyed, 48% responded it is somewhat important for instructors to use various technologies to effectively teach, with another 32% indicating it is very important.

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. Many of these students mentioned that they valued teacher-student engagement, teachers who had command over their subject areas, and interactive teaching styles.

Thirty-six percent (76 students out of 213 students) who responded 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.

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.

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. 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.

"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.

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.

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." 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.

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."

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. 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).

Revalue the notion of "play." Traditional teaching practices are obstacles to meeting the teaching and learning needs of Gen Zers. 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).

TECHNOLOGY USE PROFILE

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. 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

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 University of Hawaii campuses and community colleges. But soon there will be an evolution in the LMS design. Instructors can start to use 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. 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."

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 five 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). 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 familiar methods.
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) Some 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 teaching.
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 instruction in the classroom.
6) Although Information Technology may have dedicated staff to work with faculty, changes may not be forthcoming. One issue may be that faculty are unaware of what technology is available. IT staff too may have difficulty figuring out what technology 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. Faculty too may not be available for training for scheduled days or 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:
    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 the technology is used.
    c. Faculty tend to feel more comfortable learning from other faculty. Thus, if faculty prepare written guidelines, then directions may be clear to other faculty.
    d. Faculty would have a go-to person for technology questions, minimizing calls to the technology group.
    e. 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:
    a. Faculty are more likely to learn teaching technology when devoting a day to it, rather than trying to make time during their daily routines.
    b. The focus of the event would be 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:
    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 Google Classroom, and can be taught by IT or knowledgeable faculty. For this option to work, the campus administration needs to play a role in endorsing it. The advantages:
    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 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:
    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 ʻi 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.

The authors 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 focuses on teaching faculty how to integrate technology into the classroom.

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