STUDENT-INSPIRED OPTIMAL DESIGN OF ONLINE LEARNING FOR GENERATION Z

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ABSTRACT

This article identifies factors that help Generation Z students succeed in a fully online learning environment for communication skills. Out of a diverse number of learner characteristics, the learners' home institutions significantly impacted their preference for instructional delivery modality. The participants described a flexible schedule and instant access as the best features of a fully online course, but they demanded more real-time interactions with teachers and peers, multimedia resources, and a variety of apps. Last, the participants indicated that metacognitive and thinking skills are key to succeeding in a fully online course. Detailed suggestions are made at the end to optimize fully online courses for Generation Z students.

Keywords: Generation Z, online learning, communication skills

INTRODUCTION

Powered by an exponential growth of digital technology, the Fourth Industrial Revolution has demanded a new skill set for workers: "critical thinking, communication, collaboration, and creativity" (P21, 2015). Aligned with this trend, the National Council of Teachers of English (2013) defined 21st century literacy as an ability to

- develop proficiency and fluency with the tools of technology;
- build intentional cross-cultural connections and relationships with others to pose and solve problems collaboratively and strengthen independent thought;
- design and share information for global communities to meet a variety of purposes;
- manage, analyze, and synthesize multiple streams of simultaneous information;
- create, critique, analyze, and evaluate multimedia texts; and
- attend to the ethical responsibilities required by these complex environments.

Also, the digital revolution has significantly changed how students learn. In particular, those born between 1995 and 2010, known as Generation Z, are smartphone natives savvy with mobile technology and Web 3.0 technologies such as artificial intelligence software (Spivack, 2007; Williams, 2015). They have an unlimited access to a wide range of information through multiple channels, mostly digital platforms (Schwab, 2016; Yu, 2014). They create and distribute messages digitally, instantaneously, and collaboratively (Kumar, 2013).

Responding to Generation Z's continuous online content consumption, higher education institutions diversify their course delivery platforms, including fully online, blended learning, and face-to-face courses. In fact, one third of college students took online courses in fall 2014 (Snyder, de Brey, & Dillow, 2016, Table 311.15). College communication courses are not an exception. However, due to the short history of online communication skills courses, it is important to investigate the relationship between diverse learner characteristics and learning outcomes in an online learning environment. Aiming to identify an effective instructional design model that would help diverse online learners successfully enhance their communication skills in an online learning environment, this study investigates the following research questions:

1. What are the relationships between learner characteristics (generation differences, learning styles, motivation levels, gender, & institution types) and instructional delivery modality for communication skills?
2. What features of online learning management systems more effectively engage learners with their learning?
3. What skill set helps Generation Z students succeed in a fully online learning environment for communication skills?

BACKGROUND

Instructional Delivery Modality

The major feature of face-to-face learning is real-time, dynamic interactions between learners and teachers. However, this feature requires learners to be physically in a classroom with their teachers, which is not always possible or preferable. To accommodate learners who cannot afford or do not favor face-to-face learning, different course delivery modalities for distance education (or non–face-to-face instruction) have been explored.

Delivered by mail in the late 1800s, correspondence courses were the first distance education offered as an alternative to face-to-face learning in the United States (Jonassen et al., 2008). As media technology evolved, this format has been replaced by radio, television, computer, and satellite communication.

Later propelled by the invention of the World Wide Web in 1989, two-way interactions between learners and teachers in virtual classrooms became possible both synchronously and asynchronously without restrictions in time and location (Owen, 2014; Picciano, 2016). Internet-based online learning has served a range of purposes, from a supplemental course management system for face-to-face learning to a fully online degree program. Thanks to advanced multimedia integrations and an Internet-based interactive interface, online learning can offer enriched instructional features, such as:

- 24/7 easy accessibility,
- live real-time learning,
- self-paced learning designed to be accomplished at a student's speed,
- timed learning with designated assignment deadlines,

- asynchronous discussion boards,
- real-time video and text-based chatting,
- multimodality of communication, including email, interactive web Q&A, live contact, etc.,
- multidirectional interactions with the instructor, other students, the course materials, or other multimedia resources through course activities,
- collaboration with peers (i.e., group work, with access to peers' work for critiquing and responding to it),
- online quizzes and software for plagiarism detection (e.g., Turnitin),
- availability of multimedia materials and applications (e.g., video), and so on.

By offering more choices to learners, these features allow online learning to be easily customized to individual learners.

Despite the success of online learning, the dropout rate of online courses persists. The main reasons for online students to drop out are "physical separation, low academic skill level, low technical skill level, lack of motivation, and lack of faculty contact with students" (Lehman & Conceição, 2014, p. 8). As mixed findings have also been reported on the effectiveness of fully online learning for underprepared students (Means, Bakis, & Murphy, 2014), blended learning has been introduced. By combining the unique features of both online and face-to-face instruction, blended learning (or hybrid learning) offers the following benefits (Means et al., 2014, p. 100):

- Broadening access to instruction
- Facilitating small-group and one-to-one teacher-led instruction
- Serving students with very diverse needs
- Providing more opportunity for productive practice
- Adding variety to instruction and enhancing student engagement
- Supporting the learning of complex, abstract concepts

The ratio of online and face-to-face learning varies, but with the advancement in technology, instructional delivery modality will continue to evolve to serve the different needs of diverse students.

Learner Characteristics

For the purposes of this study, learners are characterized by generation, learning style, and motivation level.

Generation

The cut-off year for each generation varies from scholar to scholar. For this study, according to the timeline of computer technology, the participants are grouped into three generations: Generation Z, Millennials (Generation Internet), and Generation X (Generation Pre-Internet). Born in 1995 or later, Generation Z are referred to as smartphone natives because the smartphone was introduced in 1995 (Tweedie, 2015). Generation Internet (often called as Millennials) are individuals born between 1981 and 1994 because the first Internet protocol was introduced in 1981 and later evolved to the World Wide Web (Berners-Lee, 2017; Hauben, 1998). Generation X refers to individuals born between 1965 and 1980 because they are post–baby boomers who were not raised with the Internet (Bump, 2014).

Learning Style

Over the decades, learning styles have been defined by different concepts, including cognitive structure (Riding & Cheema, 1991), personality type (Apter, Mallows, & Williams, 1998), learning preference (Allinson & Hayes, 1996), learning approach (Entwistle, 1998), and learning modality (Dunn & Dunn, 1992; Fleming & Mills, 1992). Investigating the impact of instructional delivery modality, this study uses Fleming and Mills' model (1992) based on neuro-linguistic programming. According to preferred learning modes, learners are identified as aural, visual, read/write, or kinesthetic as follows (VARK Learn Limited, 2017):

- Aural: People with a strong aural preference for learning who like discussions, stories, and chatting.

- Visual: People with a strong visual preference for learning who like different formats, such as graphs, charts, and maps.

- Read/write: People with a strong read/write preference for learning who like lists, notes and text.

- Kinesthetic: People with a strong kinesthetic preference for learning who like practical exercises, examples, and trial and error.

Motivation Level

A well-balanced acquisition of five elements are required to become experts: "learning skills, thinking skills, knowledge, metacognitive skills, and motivation" (Sternberg, 2005, p.18). Sternberg explains that learning skills are the ability to build up new knowledge by relating relevant information, whereas thinking skills are the ability to turn thought into action and have three types: critical, creative, and practical. Knowledge is composed of declarative knowledge (e.g., facts) and procedural knowledge (e.g., strategies) (Sternberg, 2005). Metacognitive skills are defined as "people's understanding and control of their own cognition" (Sternberg, 2005, p. 18), which helps learners become autonomous and self-regulated (Yu, 2013).

Motivation is "the process whereby goal-directed activity is instigated and sustained" (Pintrich & Schunk, 1996, p. 4). According to the levels of "motive for success" and "fear of failure," learners are categorized into four types as follows (Covington, 1992; cited in Pintrich, & Schunk, 1996, p. 72):

- Over-strivers: They are highly motivated to avoid failure and approach success. They work very hard at achieving tasks, but they also feel very anxious and stressed because of their fear of failure.

- Success-oriented students: They are highly motivated to succeed and have a low fear of failure. They are highly engaged in achieving activities and are not anxious or worried about their performance.

- Failure avoiders: They fear failure and have a low motive for success. They are very anxious and seek to avoid failure.

- Failure accepters: They are low in their motivation to avoid failure and succeed. They are indifferent to achievement.

METHODS

Research context and participants

On a volunteer basis, 214 research participants were recruited via email and course announcement over a year from upper-level undergraduate online

communication skills courses (i.e., Intercultural Communication and Professional Writing & Communication). The courses were delivered in Blackboard and taught by the researcher at a four-year public college in the Northeast United States.

Although the participants took the same credit-bearing, fully online courses, their home institutions varied from two-year community colleges to research institutions across the Northeast. Compared to students enrolled in research institutions, students enrolled in two-year community colleges are generally considered underprepared (Tucker, 2011).

The age of the participants ranged from 18 to 47, with a mode of 21. Of the 214 volunteers, 137 were Generation Z, 67 were Millennials, and 10 were Generation X. Since the sample size of the Generation X was too small to conduct chi-Square tests, they were excluded from this study.

The GPAs of the Generation Z and the Millennial students ranged from 2.19 to 4.0 on a 4.0 scale, with a mode of 3.0. As presented in Table 1, the participants were from all different discipline areas and ethnical groups.

Table 1. Descriptive statistics of the participants

Gender	Ethnicity	Major	Institution type
64.2% female 35.8% male	60.8% White 18.1% Asian/Asian American 10.3% African/African American 8.3% Hispanic/Latino 1.0% Native American 1.5% Other	51.5% Business 26.0% Arts & Sciences 13.2% Health Care 7.8% Engineering 1.0% Education 0.5% No major	64.2% 2- or 4-year colleges 35.8% Research institutions

Procedures

This was a mixed methods study. The main data sources included participants' responses to a questionnaire and assignment grades, and an optional follow-up survey. The questionnaire was based on the work of Pintrich and Schunk (1996) and delivered online. It was composed of three sections:

- Section I asked about participants' experience with and preference for the three instructional delivery modes.

- Section II focused on the participants' strategies to create academic and social presence in different learning environments.
- Section III was designed to collect their background information.

The volunteers were asked to complete the questionnaire the third from last week of each semester. The optional follow-up surveys were conducted as needed to clarify any unclear responses to the questionnaire. SPSS 23 and MS Excel were used to answer the research questions. Chi-square tests were conducted to identify any relationships among categorical variables. In addition, extended responses to the questionnaire were analyzed in terms of topics and frequencies.

RESULTS

1. What are the relationships between learner characteristics (generation, learning style, motivation level, gender, and institution type) and instructional delivery modality for communication skills?

Generation by Instructional Modality

At the time of this research, of 137 Generation Z students, 81.8% had taken a face-to-face communication skills course at least once, 92.7% had taken a fully online course at least once, and 29.9% had taken a hybrid course at least once. Meanwhile, of 67 Millennial students, 80.6% had taken a face-to-face course at least once, 97% had taken a fully online course at least once, and 23.9% had taken a hybrid course at least once.

The observations among groups were independent. All expected frequencies of all cells were five or larger. Since these two assumptions were met, Pearson chi-square tests were conducted to determine if there were any significant associations between a learner's generation and instructional delivery modality. As presented in Table 2, the Generation Z students favored a hybrid mode over the other two modes, whereas the Millennial students preferred a fully online mode. However, the results of the Pearson chi-square test, $\chi^2(2, N = 204) = 3.85$, p > .05, indicated that a learner's instructional modality preference did not appear to be significantly associated with his or her generation. These results suggest that a learner's generation does not impact his or her preference for instructional delivery mode.

Table 2. Results of Chi-square Test and Descriptive Statistics for Generation by Instructional Modality

	Modality		
Generation	F2F	Online	Hybrid
Generation Z students	34 (24.8%)	43 (31.4%)	60 (43.8%)
Millennial students	19 (28.4%)	28 (41.8%)	20 (29.8%)

Note. $\chi2$ = 3.85, df = 2. The numbers in parentheses indicate column percentages. p > .05

Learning Style by Modality

The observations among groups were independent. All expected frequencies of 92% cells were five or larger. As seen in Table 3, the groups of Aural, Visual, and Kinesthetic learners favored a hybrid mode over the other two modes. Meanwhile, the Read/Write learners preferred a fully online mode.

However, the results of the Pearson chi-square test, $\chi2(6, N = 204) = 9.48$, p >.05, indicated that a learner's instructional modality preference did not appear to be significantly associated with his or her learning style. These results suggest that a learner's learning style does not impact his or her preference for instructional delivery modality.

Table 3. Results of Chi-square Test and Descriptive Statistics for Learning Style by Modality

	Modality		
Learning Style	F2F	Online	Hybrid
Aural	2 (15.4%)	5 (38.5%)	6 (46.1%)
Visual	19 (29.2%)	16 (24.6%)	30 (46.2%)
Read/Write	16 (28.6%)	26 (46.4%)	14 (25.0%)
Kinesthetic	16 (22.9%)	24 (34.3%)	30 (42.8%)

Note. $\chi2$ = 9.48, df = 6. The numbers in parentheses indicate column percentages. p > .05

Motivation Level by Modality

The observations among groups were independent. As there was only one failure accepter, all expected frequencies of 67% cells were five or larger. As presented in Table 4, the over-strivers and the success-oriented students preferred a hybrid mode over the other two modes. The failure avoiders equally preferred a fully online and a hybrid mode over a face-to-face mode. The failure accepter preferred a fully online. She explained that a fully online mode allowed her to "move at [her] own pace," but "if [she] still needs something explained, it is not like [she is] on [her] own. [She has] resources like [her] professor or the writing center that [she] can turn to for questions or concerns."

However, the results of the Pearson chi-square test, $\chi2(6, N = 204) = 2.45$, p >.05, indicated that a learner's instructional delivery modality preference did not appear to be significantly associated with his or her motivation level. These results suggest that a learner's motivation level does not impact his or her preference for instructional delivery modality.

Table 4. Results of Chi-square Test and Descriptive Statistics for Motivation by Modality

	Modality		
Motivation	F2F	Online	Hybrid
Over strivers	21 (26.9%)	27 (34.6%)	30 (38.5%)
Success-oriented	28 (26.7%)	35 (33.3%)	42 (40.0%)
Failure avoiders	4 (20.0%)	8 (40.0%)	8 (40.0%)
Failure accepters	0 (0.0%)	1 (100.0%)	0 (0.0%)

Note. $\chi2$ = 2.45, df = 6. The numbers in parentheses indicate column percentages. p > .05

Gender by Modality

The observations among groups were independent. All expected frequencies of all cells were five or larger. As presented in Table 5, the males favored a hybrid mode over the other two modes, but the females favored both online and hybrid. However, the results of the Pearson chi-square test, $\chi2(2, N = 204) = .67$, p >.05, indicated that a learner's instructional modality preference did not appear to be significantly associated with his or her gender. These results suggest that a learner's gender does not impact his or her preference for instructional delivery modality.

Table 5. Results of Chi-square Test and Descriptive Statistics for Gender by Modality

	Modality		
Gender	f2f	online	hybrid
Male	19 (26.0%)	23 (31.5%)	31 (42.5%)
Female	34 (26.0%)	48 (36.6%)	49 (37.4%)

Note. $\chi2$ = .67, df = 2. The numbers in parentheses indicate column percentages. p > .05

Institution Type by Modality

The observations among groups were independent. All expected frequencies of all

Table 6. Results of Chi-square Test and Descriptive
Statistics for Institution Type by Modality

Campus	Modality		
	F2F	Online	Hybrid
2- or 4-year colleges	41 (31.3%)	47 (35.9%)	43 (32.8%)
Research Universities	12 (16.4%)	24 (32.9%)	37 (50.7%)

Note. χ2 = 7.92*, df = 2. The numbers in parentheses indicate column percentages.
*p < .05

cells were five or larger. As presented in Table 6, the two- or four-year college students did not favor a particular mode. Meanwhile, the research university students noticeably favored a hybrid mode over the other two.

The results of the Pearson chi-square test, $\chi2(2, N = 204) = 7.92$, p <.05, indicated that a learner's instructional delivery modality preference appeared to be significantly associated with his or her academic level. The phi test's results, $\Phi = 0.20$, p < .05, indicated that the relationships between the two variables were moderate. These results suggest that a learner's home institution type impacts his or her preference for instructional delivery modality.

In sum, learners were grouped by generation, learning style, motivation level, gender, and type of home institution. Of these five learner characteristics, only a learner's institution type was significantly associated with instructional delivery modality preference. The participants from non-research universities did not favor a particular delivery mode. However, the participants from research universities favored a hybrid mode over a face-to-face mode and a fully online mode.

2. What features of online learning management systems more effectively engage learners with in their learning?

Emerging technologies have enriched online course platforms with a variety of instruction features. As mentioned earlier, the questionnaire of this study included 16 features as well as an open blank one that allowed the students to add unlisted features. Table 7 summarizes the participants' responses to the question: What features of fully online learning management systems get you engaged in your learning? Please rank your top five favorites.

Of the 137 Generation Z students, the majority (75.2%) favored 24/7 easy access to the course shell the most, followed by self-paced learning (40.1%), online quizzes (20.0%), the discussion board (15.3%), collaboration with peers (11.0%), and availability of multimedia and apps (11.0%). The responses from the 67 Millennials mirrored their counterpart's.

The following students' comments delineate the benefits of the top five features:

- "Thanks to the 24/7 access feature, I am able to do the work when I feel like I can";
- "I can learn anywhere in the world";
- "Self-paced learning is the type of learning environment that I thrive in since I'm self-motivated";
- "Every writer works at their own pace. Some writers can fire out a piece in maybe 10 minutes while others may take several hours or even days to brainstorm ideas and put a piece of writing together";
- "Taking quizzes online is less stressful and gives me the opportunity to do my best without the typical stress associated with exams";
- "Taking quiz also goes hand in hand with flexibility and being able to do work on your own time";

Table 7. Results of Descriptive Statistics for Generation by Online Course Management System Features

Generation	Feature Preference				
	Favorite	2nd	3rd	4th	5th
Generation Z students	Flexibility (75.2%)	Self-paced learning (40.1%)	Online Quizzes (20.0%)	Discussion board (15.3%)	Collaboration with peers (11.0%) Availability of multimedia & apps (11.0%)
Millennial students	Flexibility (77.6%)	Self-paced learning (47.8%)	Online Quizzes (25.4%)	Discussion board (15.0%)	Collaboration with peers (10.4%)

- "I like quizzes, I have almost always liked testing the knowledge that I gained, so I can go back and learn what I have missed in order to expand my education";
- "I like the interaction between classmates and the professor in the form of discussion boards, I like the sharing of all of our ideas";
- "Discussion board encourages participation";
- "Having a discussion board in an online writing class is key. This is where the writers will discuss their ideas and communicate amongst each other. Without the discussion board there would be no interaction between the peers";
- "I like to do group work and get feedback on how other people think I am doing";
- "Multimedia offers more variety to different types of learners including audio/visual learners. Also, keeps material from becoming stale (same book, same author, same tone, becomes monotonous)"; and
- "Multimedia materials make the course interesting and not boring."

The majority of the participants indicated that the greatest benefits of taking a fully online course were easy access and a flexible schedule. However, as they got used to instant messaging technology, their most difficult challenges were the lack of real time interactions with their teacher and peers, and their poor time-management skills.

The participants made some suggestions for an ideal online learning environment for communication skills. Not surprisingly, they claimed that interactions via email and discussion board were not quick enough for them to get an answer while working on assignments. They suggested more synchronous dynamic interactions, such as real-time video chatting with teachers and peers and live streamed teaching on a regular basis would be an ideal tool for them.

Peer review activity would also help them interact proactively. The following statement also emphasizes the importance of timely multidirectional interactions:

I believe that Blackboard is a pretty effective platform for conducting online courses. It is easy to view content and grades while responding to others' work. However,

I think there would be added value in supplementing this platform with a real-time chat room for the class as a whole. An instructor would be able to engage the class in real-time by evoking a sense of traditional classroom learning. A chat room would also facilitate more engagement from and between students. Any types of real-time revision or classroom instruction would enhance the online learning environment.

Also, there were requests for video-recorded lectures. One student said:

It would be cool to have online lecture that you can watch over and over (which would be like face-to-face) and still have the option to talk in person or over Skype with a professor and have online tests, homework and such. This may have an impact on writing skills as some individuals need to hear instructions and not see them or both.

The students preferred to begin a semester with individual assignments and have some time to get to know their online classmates while interacting via discussion board and then gradually move on to group projects later in the semester. Lastly, the following comment noted the importance of easy access to resources:

Learning from example is important in online learning, [including] easy access to helpful resources as well as the instructor and other students. . . lots of examples of each topic available on the course page showing what is expected.

3. What skill set helps Generation Z students succeed in a fully online learning environment for communication skills?

As mentioned earlier, a successful learner is equipped with the following five skills: "metacognitive skills, learning skills, thinking skills, knowledge, and motivation" (Sternberg, 2005, p.18). Table 8 summarizes the responses from the Generation Z students and the Millennial students to the question: Which area do you need to improve the most to succeed in a fully online course for communication skills?

The Generation Z students reported that they needed to improve their metacognitive skills the

most, followed by thinking skills, knowledge of the subject matter (i.e., writing skills), motivation, and learning skills. The Millennial students also wanted to improve their metacognitive skills the most and then knowledge of the subject matter, thinking skills, motivation, and learning skills.

In other words, both generations indicated that they were good at building up new knowledge on prior knowledge. However, the majority of the participants expressed that they should be more autonomous, critical, and creative.

LIMITATIONS

Due to a relatively small sample size, caution should be taken in generalizing the findings of this study. Further research needs to address how to foster online leaners' metacognitive skills as well as critical thinking skills and creativity.

DISCUSSION

First, in terms of instructional delivery modality for communication courses, the learners' characteristics (generation, learning style, motivation level, and gender), were not significantly associated with their preference for modality. These findings imply that there is no need to customize instructional delivery modality according to learner's age, learning style, motivation level, and gender.

However, learners' home institution types seemed strongly associated with their preference for instructional delivery modality. The two- or four- year college students' preference for modality spread evenly across the three modes. However, the students from research institutions noticeably favored a hybrid mode over a fully online mode and a face-to-face mode. These findings suggest that two- or four-year colleges should diversify instruction delivery modes so that students can have a choice. Meanwhile, research institutions should accommodate the strong demand for a hybrid mode.

Second, regarding online learning management system features, not surprisingly, both the Generation Z and the Millennial students demanded more control over their own learning, including flexible schedules and instant access. Accordingly, a fully online course should include various features that allow learners to control their own learning.

Both generations liked to complete assignments at their own pace and favored a one-week assignment window. They both liked working individually and in a group. In particular, despite the lack of real-time interactions, they enjoyed engaging with their online peers via discussion board. Online collaborations with their peers were challenging but helped them not feel isolated. An online course should accommodate their demand for more real-time interactions with teachers and peers, multimedia resources, and apps. In fact, there are many apps supporting real-time video conferencing, such as Skype, Messenger, Zoom, and so on.

Interestingly, several students noted that taking a quiz online was more comfortable than taking it in class. It also helped them effectively comprehend the subject matter. For communication skills courses, a quiz would be an ideal format for students to enhance their knowledge of writing conventions, citations, and vocabulary.

Last, both generations indicated that metacognitive and thinking skills were a key to success in a fully online course, and they need to improve these two skills the most. Considering that the majority of students were juniors or seniors, they have practiced learning skills by relating new knowledge to prior knowledge over the years. However, they did not seem to have enough opportunities to develop metacognitive skills, which is the foundation of autonomy. Metacognitive skills refer to an ability to "plan, monitor, and evaluate their learning" throughout the learning process (Schraw, 1998, p.11). Self-

Table 8. Results of Chi-square Test and Descriptive Statistics for Generation by Five Skills

	Skills				
Generation	Metacognitive	Thinking	Knowledge	Motivation	Learning
Generation Z students	38 (27.8%)	34 (24.8%)	24 (17.5%)	23 (16.8%)	18 (13.1%)
Millennial students	21 (31.3%)	14 (20.9%)	15 (22.4%)	13 (19.4%)	4 (6.0%)

Note. $\chi^2 = 3.37$ df = 4. The numbers in parentheses indicate column percentages.
$p > .05$

reflection is essential in developing metacognitive skills. Based on feedback from instructors, peers, and themselves, a multilayered revision process was reported to help students enhance their self-reflection skills and become more autonomous (Yu, 2013). Journaling their writing process and discussing it with instructors and peers would also be useful.

In order to develop and sustain thinking skills, writing assignments should be designed to serve that purpose by stimulating students' curiosity and satisfying their interests through allowing them control over writing topics, genres, and presentation. The skills of critical and practical mind would be enhanced by having students use self-developed criteria to evaluate their own performance and that of others.

CONCLUSIONS

Today's learners come with a wide range of digital literacy levels due to a digital divide. However, blinded by the boundless possibilities brought by emerging technologies, we all rush to jump on the bandwagon of the idea that emerging technologies will serve our diverse students. As shown by the findings of this study, one size does not fit all. The focus should be on the students, and we, as educators, should approach each student as an individual and fully understand each individual student and customize support for them that will optimize the learning environment.

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