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**Pedagogical practice preferences among generational groups of learners:
Towards effective twenty-first century higher education**

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Keywords

generation X, generation Y, generation Z, higher education, learners, pedagogical practices, preferences, twenty-first century



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Pedagogical practice preferences among generational groups of learners: Towards effective twenty-first century higher education

Abstract

Facilitating learning for the students nowadays demands so much from the educators. This makes the role of higher education institutions (HEIs) more challenging as they look upon the needs of the present generation. This study sought answer to that need by determining the most preferred pedagogical practices that have impact on the students' ability to stay motivated and learn effectively. Randomly selected higher education students including bachelor, masters' and doctorate students were surveyed. Majority of the students belong to the so-called Net Generation. They prefer pedagogical practices that engage multiple channels of learning and on ways of assessing the learning outcomes. They thrive more on relevant, applicable, active learning and project-based tasks while working with their learning partners including faculty and students of shared interests. Results of correlation analysis revealed a significant relationship between students' demographics, and their preferences for pedagogical practices. Analysis of Variance indicated highly significant difference in the preferences for pedagogical practices across generational groups of students. Higher education is indeed changing and thus requires continuous change and improvement on the part of educators who find comfort in utilizing the twentieth century pedagogical practices. Now that innovations and technological breakthroughs are inevitable, educators must take a stand and set the bar in promoting effective twenty-first century higher education.

Keywords

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Educating the current generation of students is a difficult and challenging endeavour. It demands so much time, effort and even resources on the part the educator who used to be the so-called “sage on the stage”. Now that the generation of students had also evolved, educators also are expected to evolve. Contemporary higher education students nowadays are variable mix of generations. They have developed new set of learning preferences. One of their most typical characteristics is being visually stimulated learners (Worley, 2011). According to Mohr and Mohr (2017), their exposure to cable TV, smart phones, video games, computer software and internet had much to say about their learning preferences. With that, they tend to have less attention span which has to be taken into account. Educators seek various ways in motivating this generation of students for effective learning. In short, educators need to understand the fact that this generation of students have their unique characteristics and learning preferences. Given that twenty-first century demands so much from the current generation of learners, it is imperative to do something along the process.

The twenty-first century is the current century of the Common Era, in accordance with the Gregorian calendar. It began on January 1, 2001, and will end on December 31, 2100. It is the first century of the third millennium (Martin, 2012). It calls for a revolutionised way by which people access and spread information, work, and socialise due to technological advancement. This technological advancement has led to the automation of many human job tasks, globalization of the economy, workplace change, and policies that promote personal responsibility concerning job security, health care, and financial planning (Jerald, 2009). As a result, education of the present century is responsible for providing students with the right training that will equip them with twenty-first century skills.

The term twenty-first century skills refers to a broad set of knowledge, skills, work habits, and character traits that are believed to be critically important to success in today’s world. It demands the education system to teach students the most relevant, useful, in-demand, and universally applicable skills in a complex, competitive, knowledge-based, information-age, technology-driven economy and society (Bellanca, 2010). Trilling and Fadel (2009) provided a brief illustrative overview of the knowledge, skills, work habits, and character traits commonly associated with twenty-first century skills. They were grouped into three categories: (i) learning and innovation skills (i.e., critical thinking and problem solving, communications and collaboration, creativity and innovation); (ii) digital literacy skills (i.e., information literacy, media literacy, and information and communications technologies (ICT) literacy); and (iii) career and life skills (i.e., flexibility and

adaptability, initiative and self-direction, social and cross-cultural interaction, productivity and accountability, leadership and responsibility). In fact, these descriptions talk about what is currently happening around the world. Given the current situation worldwide, everyone is in the midst of a social revolution accelerated by the COVID-19 pandemic.

Context

This COVID-19 pandemic has shuttered not just the global economies but moreover the education systems in developed and developing countries such as the Philippines. With the imposition of the Enhanced Community Quarantine (ECQ) by the Philippine President Rodrigo R. Duterte since March 16, 2020, higher education institutions (HEIs), both public and private, have also had to adjust to the new situation where face-to-face interaction and mass gatherings are prohibited (IATF Resolution No. 38, S. 2020). This has brought the country's education system in the process of transformation and this has led to testing the conventional teaching and learning process inside a classroom, and adapting to innovative teaching practices. The leading universities and colleges in the country, particularly those affiliated with the ASEAN University Network such as the University of the Philippines found innovative ways to fulfil their trifocal functions in the area curriculum and instruction, research and publication as well as in public service.

As they realized the need to shift to new ways of teaching, teachers and school administrators, are putting up their best efforts to revise and adapt their course syllabi, as well as their academic requirements. The shift is towards being in alternative or remote teaching modalities through either synchronous or asynchronous means, where teachers and students engage themselves in learning via electronic gadgets as accessed primarily through the internet (Toquero, 2020). With the shift comes into the fore the need for learning management systems (LMS) such as Canvas, Moodle, blackboard which provide the virtual learning environment. Other applications like Google Hangouts, Zoom and Skype lend support to these LMS. Other platforms are being utilized to complement inefficiencies in connectivity and network devices. These include smartphones which are the primal means for exchange of notes, messages and even materials. Other popular apps like the Facebook, Twitter, provide the timely support. Emails remain the most notable and formal means to engage the students.

The pandemic has also brought the trends in higher education to keep on evolving so fast. Hence a realization on the importance of evaluating the twenty-first century pedagogical practices is being put forward. This realization is primarily concerned with responding to critical question like: "How

will a twenty-first century teacher provide an effective twenty-first century education?” is the question that the study aimed to answer.

The study specifically (i) determined the most preferred pedagogical practices of the higher education students in terms of teaching approaches and strategies; (ii) analysed the relationship between the generation of students and their preferred pedagogical practices, and (iii) analysed the difference in the pedagogical practice preferences across generations of students.

Pedagogical practices in the twenty-first century higher education

The following section discusses the summary of various pedagogical practices in the twenty-first century higher education.

Direct approach using technology-mediated instruction

Direct approach is also known as the traditional lecture method. One of the main characteristics of this approach is being teacher-directed where the teacher stands in front of a classroom and presents the information. The teacher being the “sage on the stage” emphasizes on the teaching of specific knowledge and skills to the learners. But with technological breakthrough, the traditional lecture method is now supported with technology mediated instruction where the teachers are using technology to enhance or deliver instruction effectively. When designed and implemented effectively, technology (multimedia, the web, e-mail, or computer simulations) can assist information transfer and assist learners in achieving their particular goals. Various technologies can provide an array of delivery techniques which can match the diverse learning styles when appropriately designed (Bunn & O’Connor, 1997). Technological devices such as wireless laptops, electronic decision boards, handheld computing, video devices, and computer assisted problem-solving systems, electronic video games, and web-based-mediated instructional systems too have been found effective in augmenting learning (Belal, 2011; Hu & Hui, 2012; Krishnakumaryamma & Venkatasubramanian, 2018).

Indirect using inquiry-based instruction

Indirect/guided/exploratory approach using inquiry-based instruction is a student-centered approach and is characterized by *discovery*, *heuristic* and *problem solving*. It is modeled after the investigative processes of scientists where the students learn by doing. Rather than the teacher telling students what they need to know, students are encouraged to explore the material, ask questions, and share

ideas. Here the teacher's role is shifted to being "guide on the side". Inquiry-based learning uses different approaches to learning, including *small-group discussion* and *guided learning*. This allows them to build knowledge through exploration, experience, and discussion. Researchers have found that inquiry-based activities can boost students' learning in a wide range of school subjects. There is evidence that inquiry-based learning can motivate students to learn and advance their problem solving and critical thinking skills (Andrini, 2016; Arsal, 2017; Duran & Dökme, 2016; Hairida, 2016).

Differentiated instruction

Differentiated instruction and assessment, also known as *differentiated learning* provides all students a range of different avenues for acquiring content; processing, constructing, or making sense of ideas in order for them to learn effectively. Differentiated classrooms operate on the premise that learning experiences are most effective when they are engaging, relevant, and interesting to students. By considering the students' varied learning needs, teachers can develop *personalized instruction* where they set different expectations for task completion for students, specifically based upon the students' individual needs (Algozzine & Anderson, 2007). Since differentiated instruction is marked by a repeated rhythm of whole-class preparation, review, and sharing, followed by opportunity for *individual* or *small-group exploration*, extension, and production researchers concluded that differentiated instruction has potential power to affect students' academic achievement positively (Parsons et al., 2018; Scheerens, 2016; Smale-Jacobse et al., 2019).

Blended learning

Blended learning also known as *integrative learning*, *hybrid learning*, *multi-method learning* combines classroom learning, mobile learning, and on-line learning. *Flipped classroom*, a known version of blended learning is one where students are introduced to content at home, and practice working through it at school supported by a teacher and/or peers. In this way, traditional roles for each space are flipped. Tools and online resources such as google classroom, you tube, zoom, microsoft teams, skype, moodle, blackboard are used to flip the classroom. Through these platforms, students can access videos of lectures, track assignments and progress, interact with teachers and peers, and review other supporting materials, like power point presentations, articles and other learning resources online. In 2010 meta-analysis published by the U.S. Department of Education, researchers reported that students exposed to both face-to-face and online education were more successful than students entirely in one camp or the other. Blended learning transforms a largely

transmissive method of teaching (Means et al., 2010; Means et al., 2013). Other researchers discussed some emerging practices in blended learning, practices that address evidence-based methods for promoting student engagement, practices for video production, and other topics related to online teaching and featured the implications of all of these findings in teaching (Graham, 2013; Petersen, 2016).

Digital game-based learning

Digital game-based learning refers to using actual digital video games as learning tools. Digital games help students learn subject matter in context, as part of an interactive system. Game-based learning should not be confused with gamification. *Gamification* takes an element of education and replaces it with a game-based element. For instance, a teacher may replace grades with levels or experience points. According to De Freitas (2006), video and computer games, online games, serious games and simulations or games that model real-world situations may be used in digital game-based learning. Many educators use games in higher education as an *experiential learning* pedagogy. Having students play games has increased participation, interaction, interest and learning (Camp et al., 2012). Researchers have supported its effectiveness in education. For instance, a serious game environment can promote student learning and motivation (Erhel & Jamet, 2013; Wouters et al., 2013). Another factor for the acceptance of digital game-based learning, according to EDUCAUSE Review, is that today's students are a part of a digital generation that has become disengaged with traditional instruction (Foreman, 2004).

Varied

With the coming of net generation students, teachers are inclined not to stick in just one teaching method. Teachers are having a ready repertoire of teaching methods from which to draw any time. These include some constructivist approaches such as *open/group discussions* and *dialogue, role playing, reflective, metacognitive exercises, research activities (self-discovery) learning partnership*, other hands on and creative activities (Alt, 2012; Pelech, 2010). Constructivist approaches engage the students in active learning and that the teacher's role is to assist them in what they are doing (Fernando & Marikar, 2017). Similar with other teaching approaches, it has proven effective in education (Barman & Bhattacharyya, 2015; Orbanić et al., 2016).

Materials and methods

Research design

This study used survey research design to determine the most preferred pedagogical practices of the students so as to promote an effective twenty-first century higher education. Survey is used to gather the opinions, beliefs and feelings of selected groups of individuals, often chosen for demographic sampling (Nardi, 2015). This study included demographics such as age or birth year, sex, education or the degree program levels of the students. It involved asking each student for information through a questionnaire.

Population and sampling technique

The researcher used simple random sampling in selecting the respondents. A simple random sample is a subset of a statistical population in which each member of the subset has an equal probability of being chosen. A simple random sample is meant to be an unbiased representation of a group (Frey, 2018). The subjects were the students of the College of Public Affairs and Development, University of the Philippines Los Baños (CPAf, UPLB). The CPAf offers relevant academic courses on development and governance studies. It is composed of an institute and two centres. Its institute, namely the Institute for Governance and Rural Development (IGRD), offers undergraduate and postgraduate courses in education (<https://cpaf.uplb.edu.ph/>).

The study used the simple random sample of the names of 127 CPAf students being chosen out of a hat from the College of 212 students who were taking education courses during the second semester of the academic year 2018-2019. The researcher prepared a list of all the students initially, and then each member was marked with a specific number from 1 to $n = 212$.

These randomly selected 127 respondents agreed to participate in answering the survey questionnaire. They were composed of 44 undergraduate and 83 postgraduate students (i.e., 63 master's (MS) and 20 doctorate (PhD) students). They represented 60 per cent of the total research population of 212 students who were taking education courses during the academic year. Since the researcher was the program coordinator during the conduct of the study, the respondents were contacted and recruited through their respective professors and some were contacted through sending private message, texts, and emails to ask for their consent. All of the contacted students agreed and they participated in answering the survey questionnaire after their classes. It took an average of 10 to 15 minutes for the respondents to answer the survey.

Measures

The instrument for the preference to pedagogical practices was designed by the researcher. This was developed after an extensive literature review. Pedagogical practice preference was measured using a self-administered questionnaire consisting of 55 statements reflecting the teaching practices from where the students find themselves learning effectively and engaging actively in the learning environment being provided by their professors. These pedagogical practice statements were grouped into two: (a) major teaching approaches and (b) teaching strategies. Teaching approach refers to a set of principles about the nature of learning which is translated into the classroom. It stems from the educator's personal philosophy of teaching and learning. It may vary in the degree of teacher and learner engagement, focus, number of learners involved in the teaching-learning process (Salandanan, 2012). There were nine teaching approaches included in the study. These were (i) direct approach using technology-mediated instruction, (ii) indirect approach using inquiry-based instruction, (iii) differentiated instruction, (iv) blended learning, (v) digital game-based learning, (vi) experiential/interactive/collaborative learning, (vii) learning partnership, (viii) varied, and (ix) diversified feedback/assessment techniques.

Under each teaching approach were specific teaching strategies, which refer to long term plan of action designed to achieve a particular learning goals and objectives. A total of 46 teaching strategies were included in the questionnaire. Each statement was measured using a seven-point Likert scale ranging from strongly disagree (7) to strongly agree (1). The instrument undergone face validity where the survey questionnaires were reviewed by two different parties. The first group was consisted of three education specialists who were familiar with the various teaching approaches and strategies. They evaluated the questions/statements and made sure that each question/statement successfully captured the research topic and problem. The second review was done by a statistician who ensured that the survey did not contain common errors such as leading, confusing or double-barrelled questions/statements. The validation process resulted to slight alteration in the contents of the survey questionnaire. The researcher also run a pilot test of the survey and reviewed the internal consistency of questions by conducting the test of reliability with test-retest to a group of 25 students who were not part of the study. The administration of retest was two weeks after the first test. Likewise, the Cronbach-Alpha method was applied and the result got a total test and retest scores (0.80 and 0.82) with a reliability factor of 'good'.

Tools for data analysis

The study employed descriptive statistics such as frequencies, percentages, means, and standard deviations to provide descriptive analysis of the data gathered. To further validate the responses, the

Kendall's W or Coefficient of Concordance was used to assess the agreement in the responses among students. The Kendall's W or Coefficient of Concordance for each item ranges from 0 to 1. A Kendall's W yield of zero indicates no agreement at all among students, while 1 indicates perfect agreement (Salkind, 2010). Pearson's chi-square test was utilized to determine the relationship between categorical variables. Whereas Spearman's Rank Order Correlation was used to determine the magnitude of relationship among the variables. The interpretation of the correlation coefficient was based on the study of Schober et al. (2018). To test the significant difference in the pedagogical practice preferences among the students across degree levels, generation and sexes, Analysis of Variance (ANOVA) was applied. Further, Tukey's honestly significant difference (HSD) post hoc test was used to uncover the specific differences between the groups for ANOVA F test that was found significant.

Results and discussion

The following sections present the detailed discussion of the findings based on the objectives of the study. Tabular presentations were used to show the results based on the order of overall frequencies of strongly agree scale from the highest to lowest value/s computed in each of the statements that quantifies the higher education students' pedagogical practice preferences.

Sample demographics

Higher education students were described in terms of their generation as indicated by their birth year, sex, and degree program level. Most of the students were born between 1981 and 2010. Most of these students belong to the so-called Generations Y and Z which constituted 80 per cent of the total number of respondents. In particular, 44 per cent of the students belong to Generation Z and 36 per cent belong to Generation Y. Only 20 per cent belong to Generation X. Basically, members of Generation Y and Z also referred to as the N Generation (Net generation or Net Gen), are resilient to major change. They were born and raised in the digital world (Postolov et al., 2017). Net gen students have been characterized as being technologically savvy, having grown up in an age where computers, mobile phones, and the Internet are part of mainstream culture and society (Del Giudice, 2013). Thirty-five per cent of them were male and 65 per cent were female. Thirty-five per cent were taking bachelor's degree, 49 per cent of them were taking their masters' degree, while 16 per cent were in their doctorate degree.

Pedagogical practice preferences of higher education students

Based on the results, majority of the items from the list of top 10 most preferred pedagogical practices of higher education students were directly related to assessment techniques (Table 2). Eighty-two per cent of them preferred to have a clear, objective and variety of methods of assessment. They also preferred to have explicit guidelines on how they will be able to get better/higher grades by providing with them regular and prompt constructive feedback through variety of means such as print, online, and face-to-face. Since majority of the respondents were net gen students, they prefer multimodal techniques, including audience response systems that provide immediate feedback and internet-based materials (Schwartz et al., 2018).

Table 1

Demographic profile of the students

Demographics	<i>f</i>
Age group	
1995 and 2010	56
1981 and 1994	46
1965 and 1980	25
Degree level	
Bachelor's Degree	44
Master's Degree	63
Doctorate Degree	20
Sex	
Male	45
Female	82

In addition to diverse methods of assessments, higher education students also showed preference to varied teaching strategies and techniques. This is one of the positive attributes of this generation of students, that they are more accepting of diversity (Ferris, 2012). Eighty-one per cent have preference for integrative teaching where the professor connects the lesson to one another, to other disciplines and to life. Seventy-nine per cent of the students preferred to be encouraged by their professors to work in different roles to discover their strengths, preferences, and interests, thus giving them opportunities to explore and move out of their comfort zones. Constructivism is another most preferred teaching strategy by the students. Seventy-nine per cent of them preferred being asked to construct knowledge and meaning by connecting the lesson with their past experiences. Through this, self-conceptualization of the solution to the problem is encouraged among the students (Bhattacharjee, 2015; Dagar & Yadav, 2016). Seventy-six per cent loved problem solving and other

problem-based instructional methods, where they are encouraged to investigate their own ideas and think about their own cognitive and thought processes. Problem-based learning is considered to be a powerful pedagogical approach as it actively engages students in a learning and teaching process (Kek & Huijser, 2011) while improving student attitudes (Ferreira & Trudel, 2012; Vernon & Blake, 1993 in Docherty, 2018), motivation (Megan & Huijser, 2018), and long-term retention of knowledge compared to traditional instruction (Prince, 2004 in Docherty, 2018). It focuses on developing essential twenty-first century skills such as critical thinking and problem solving skills in the students thus, preparing them to solve the real societal problems.

Table 2

Teaching strategy preferences of higher education students

Rank	Strategies	<i>f</i>	%
1	Using clear, objective and variety of methods of assessment.	104	81.9
2	Integrative teaching	103	81.1
3	Providing explicit guidelines on how to get better/higher grades, which are consistent with most performance assessment.	101	79.5
4.5	Personalized teaching	100	78.7
4.5	Constructivism	100	78.7
6	Designing appropriate and fair assessments of achievement consistent with his/her teaching methods such using e-portfolios to track assignments throughout the semester.	97	76.4
7	Problem Solving/Problem-Based Method	96	75.6
8.5	Metacognitive/Self-Regulation	95	74.8
8.5	Providing regular and prompt constructive feedback—positive and negative, print, online, and face-to-face.	95	74.8
10	Building trusted and effective partnership with students and peer teachers, where they are becoming partners in learning with students.	94	74.0

By way of using variety of teaching techniques, professors not only keep the students engaged in different ways but also allow them to build trusted and effective partnership with their students. This learning partnership helps a learner to pass the zone of proximal development, which presupposes an interaction between a more competent person and a less competent person on a task, whom in the

end becomes independently proficient at what was initially a jointly accomplished task (Dagar & Yadav, 2016).

Furthermore, results of correlation analysis (Table 3) revealed a significant relationship between students' demographics, and their preferences for pedagogical practices. However, the strength of relationship is weak in all of the stated variables. That is, there were weak negative relationships among students' generation ($r_s = -0.137$); degree level ($r_s = -0.140$) as well as their sex and their pedagogical practice preferences ($r_s = 0.004$). This implies that student's preference for specific pedagogical practice changes (either increases or decreases) depending on their level of education, generation or age, and their sex. In particular, younger students or those who belong to generation Y and generation Z tend to stay motivated in the learning environment that provides variety of ways in presenting the content and achieving the intended learning outcomes for a specific course and degree program. They find the various pedagogical practices engaging and have impact on their ability to learn effectively. Technology usage and innovative activities keep them engaged and motivated (Mohr & Mohr, 2017). That is, the more diverse the methods and techniques of teaching and assessment of learning outcomes, the more engaging they find the learning environment. Indeed, net gen students prefer innovative teaching techniques with emphasis on hands-on learning experiences in a non-competitive environment, behaviourally based and individualized feedback, and use of technology to manage information (Schwartz et al., 2018). While older students or those who belong to generation X tend to stay motivated in a structured teaching-learning process which caters to their being self-reliant in terms of their work ethic (Bernstein & Bhugra, 2011). They focus on "the way we were taught" rather than on the unique educational needs of the current generation (Schwartz et al., 2018). Truly, these generational groups of students have common personality with specific beliefs, values, attitudes and expectations that affect their behaviour in educational setting (Chaudhuri, 2018).

Table 3

Relationship between students' demographics and pedagogical practice preferences

	Degree level	Generation	Sex
Chi-Square	21.937 ^{b**}	11.827 ^{b*}	10.780 ^{c**}
df	2	2	1
Asymp. Sig.	0.000	0.003	0.001

** p < 0.01; * p < 0.05

Table 4 presents the overall mean ranking of the most preferred teaching approaches of the students. Consistent with the finding on the students' preference for strategies, approaches that gear towards diversified feedback appeared to be the most preferred teaching approach of the students ($\bar{X}=1.34$, $SD=0.44$). This is followed by the learning partnership ($\bar{X}=1.35$, $SD=0.47$) and inquiry-based instruction ($\bar{X}=1.46$, $SD=0.49$). Other preferred teaching approaches included differentiated instruction ($\bar{X}=1.47$, $SD=0.54$), and blended learning ($\bar{X}=1.52$, $SD=0.60$). According to O'Connor and Sharkey (2013), student learning is high when the setting accommodates diverse learning preferences. This is where the learning context provides opportunity to explore new information and builds a knowledgebase as well as communicates individual usefulness and relevance.

Next gen students expect professors to use technology to support traditional instruction (Belal, 2011). Since net gen students have inclination to varied teaching approaches, experiential, interactive and collaborative learning were also motivating to them. They belong to an exclusive generation that is optimistic, collaborative, team-oriented, and are very reliant on technology (Chaudhuri, 2018). In the twenty-first century, the nature of work has become more complex. The use of technological resources as well as individual efforts for work completion are crucial. Thus, teamwork will become more essential to organizational productivity, given that there is a relationship between teamwork and the level and quality of productivity and occupational performance in workplaces as indicated by several previous studies (Manzoor et al., 2011; Oseiboakye, 2015; Sanyal & Hisam, 2018) Traditional lecture or the direct approach may no longer attractive to them, but still with the use of technology, net gen students may find it engaging as well. For them, the bringing up of facts is just data and not learning (Oblinger & Oblinger, 2005). Hence, they do not respond well to the lecture but to those pedagogical practices that encourage independent thinking and interaction (Postolov et al., 2017). Being the first generation of students to grow up with digital technology, they prefer visuals and graphics than text (Chaudhuri, 2018; Mohr & Mohr, 2017).

Coefficient of Concordance revealed congruence in the preferences of the students regarding the pedagogical approaches that they perceived having greater impact on their ability to learn effectively and stay motivated in the teaching-learning process. Basically, the statistical findings showed a *moderate agreement* in the students' preferences for all pedagogical approaches stated (Kendall's W ($df=8$, $n=127$) = 0.37, $p=0.00$). The findings were all statistically significant.

Table 4*Summary of teaching approach preferences of net gen students*

Approaches	Mean	SD	Kendall's W
A. Diversified Feedback	1.34	0.44	0.32
B. Learning Partnership	1.35	0.47	0.28
C. Indirect using Inquiry-Based Instruction	1.46	0.49	0.36
D. Differentiated Instruction	1.47	0.54	0.38
E. Blended Learning	1.52	0.60	0.32
F. Varied	1.55	0.54	0.40
G. Experiential/Interactive/Collaborative Learning	1.59	0.57	0.40
H. Direct Approach using Technology-Mediated Instruction	1.62	0.57	0.43
I. Digital Game –based Learning	1.71	0.78	0.43

Kendall's W level of agreement: 0.00 No; 0.10-Weak; 0.30-Moderate; 0.60-Strong; 1.00=Perfect

Analysis of Variance (Table 5) indicated highly significant difference in the preferences for pedagogical practices across generation of students ($F(2,127) = 4.318, p = 0.015$). Tukey's honestly significant difference (HSD) post hoc test specified that the differences in the pedagogical practice preferences occurred only between groups of Generation X (i.e., born between 1965 and 1980) and Generation Y (i.e., born between 1981 and 1994) students ($p = 0.016$), as well as groups of Generation X and Generation Z (between 1995 and 2010) students ($p = 0.016$), but not between groups of Generation Y and generation Z students ($p = 0.97$). This is particularly true given the fact that these students, which comprised of bachelors and master's students belong to the net generation and thus have similar characteristics and learning preferences. Both have the desire to be engaged and hands on. They have become accustomed to interactivity, i.e., methods of presentation, hands-on methods and group methods that are linked to e-learning and mobile technology (Postolov et al., 2017). However, no significant difference was found in the pedagogical practice preferences across degree programs ($F(2,127) = 2.883, p = 0.060$) as well as between sexes ($F(1,127) = 0.689, p = 0.408$).

Table 5*Significant difference in the pedagogical practice preference across generation*

	Sum of Squares	df	Mean Square	F	p
Between Groups	1.412	2	0.706	4.318	0.015**
Within Groups	20.276	124	0.164		
Total	21.688	126			

** $p < 0.01$

Conclusions

The study discusses the pedagogical practices that were mostly preferred by the generational groups of students in higher education. It further affirms how unique the generation of learners are nowadays. They are a multi-modal generation and therefore demand pedagogical practices that engage multiple channels of learning and on ways of assessing the learning outcomes. This generation of students feels a responsibility to take action in solving real societal problem. For this reason, they thrive more on relevant, applicable, active learning and project-based tasks while working with their learning partners including faculty and students of shared interests. Since they prefer to engage using interactive multimedia, professors could make use of this technology in their way of providing direct instruction to their students. This way of building the pedagogical practices on the students' intuitive skills in technology will make the learning experiences more meaningful.

Higher education is indeed changing and is influenced by the experiences, attitudes, beliefs, and preferences of today's generation of students. As twenty-first century educators, professors need to embrace the power of technology to make learning relevant for all students in higher education. While this is what motivates and engages them in learning, adopting these pedagogical practices empowers students to take more responsibility for their own learning. This will also help educators to better understand their students.

Determining the students' pedagogical practice preferences is essential for the success of any level and form of education, whether it is formal, non-formal or even informal. As we are currently in the midst of a social revolution which had been accelerated by the pandemic, this study paves the way for many educators to reevaluate their teaching practices and consider what lies ahead. Furthermore, it provides an avenue for educators in aligning their teaching and learning practices according to the nature and characteristics of the students. It acknowledges that this transformational shift in pedagogical practices can be a challenge for some as the increase of online delivery and integration of more technology poses challenge.

Limitations

Since the study employed a small sample size, and limited to higher education students, future researchers may expand the number of study participants, explore on the other generational group of learners and further investigate and incorporate the stand of generational groups of teachers who belong to other disciplines or field of studies. With the current situation brought about by COVID-

19 pandemic, future researchers may focus on remote teaching and learning practices that will engage the generational groups of learners in all levels of education.

Practical implications

Truly effective twenty-first century teaching requires continuous changes in the entire system as it depends on the tripartite relationship among students, educators and higher educational institutions (HEIs) with established pedagogical practices. With this, HEIs support for sustained professional development is therefore crucial. By offering different modes of instruction: students will have choices between in-person, hybrid, and completely online/remote instruction so they can build a curriculum that works best for their personal comfort. With the advent of remote teaching and learning due to COVID-19 pandemic, the use of digital technology to support social distancing, such as videoconferencing tools, feedback tools, and assessment tools has become more practical. This implies the increasing value of offering training on educational technology for both teachers and students. Educators need to acquire online-driven competencies in planning, implementing, and assessing the performance of their students. These online-driven competencies can assist them in implementing the courses through electronic delivery effectively (Toquero, 2020). Various technological devices, program design, responsive curriculum, and supportive stakeholders are necessary and significant for the successful delivery of the lessons in an online environment (Barr & Miller, 2013). Thus, the school leaders must provide ways of utilising the school resources efficiently.

Though, the process might seem very challenging to those educators who want to keep their twentieth century practices, continued support from the government and their respective institutions will help ease their discomfort. This in the same manner will give way for educators to fulfil their significant role in this present time. Being transformative intellectuals, the twenty-first century educators' focus must be on shaping students to become agents of social change. While innovations and technological breakthroughs can no longer be denied, professors must take a stand and set the bar in the field of higher education. One way to achieve this is to utilize pedagogical approaches and strategies that are not only in line with the students' unique characteristics and learning preferences but that which will equip every student with high level of life skills and competencies necessary for the twenty-first century.

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