

# Antecedents of graduate students' preferences for online, blended, and face-to-face learning in Nigeria

 Sunday Abidemi Itasanmi<sup>1\*</sup>,  Oluwatoyin Ayodele Ajani<sup>2</sup>,  Helen Akpama Andong<sup>3</sup>,  Abiola Adiat Omokhabi<sup>4</sup>

<sup>1,4</sup>Department of Adult Education, University of Ibadan, Nigeria.

<sup>2</sup>Language and Social Sciences Education, University of Zululand, KwaDlangezwa, South Africa.

<sup>3</sup>Department of Continuing Education and Development Studies, University of Calabar, Nigeria.

\*Corresponding author: Sunday Abidemi Itasanmi (Email: [itasunny2000@gmail.com](mailto:itasunny2000@gmail.com))

## ABSTRACT

**Purpose:** This study examined graduate students' preferences for online, blended, and face-to-face learning and factors that may influence their preferences through the lens of Rational Choice Theory (RCT).

**Design/Methodology/Approach:** The study adopted a quantitative approach, and 3120 graduate students from the University of Ibadan participated in the study. A structured survey comprising four sections—demographic characteristics, technology self-efficacy (TSE), digital literacy (DL), and learning mode preference (LMP) was utilized as an instrument of data collection. Frequency counts, simple percentages, and Pearson's Chi-square (x2) test of independence were used to estimate students' learning mode preference and explore the association between demographic characteristics, TSE, DL, and LMP.

**Results:** It was revealed that blended learning was the most preferred instructional method among the graduate students, followed by online and face-to-face methods. Also, the study established that graduate students' preferences for online, blended, and face-to-face learning modalities vary based on age, marital status, employment status, programme type, and levels of technology self-efficacy and digital literacy. Moreover, the research revealed that graduate students' preferences for online, blended, and face-to-face instructional delivery are mainly influenced by their employment status, programme type, and levels of technology self-efficacy and digital literacy.

**Conclusion:** This study highlighted the need for institutions and instructors to consider the identified factors to understand better why students may gravitate towards one mode of learning over others when designing and delivering instructional formats to meet the diverse needs and preferences of graduate students.

**Keywords:** *Blended learning, Face-to-face learning, Graduate students' preferences, Nigeria, Online learning, University of Ibadan.*

## 1. INTRODUCTION

The advent and continual advancements in Information and Communication Technologies (ICTs) especially the Internet, have significantly reshaped the educational landscape, both on a global scale and particularly within higher education. It has brought about transformative change in the processes of teaching, learning, and research, thus revolutionizing the way learning is delivered and experienced (Itasanmi, Ekpenyong, Akintolu, & Ajani, 2022). As the digital age continues to evolve, there is a radical change in the concept of traditional education. Being physically present in a classroom is no longer the sole learning alternative (Josep, 2020). Nowadays, people have access to quality educational opportunities and can learn, communicate, and exchange information wherever and whenever they desire (Itasanmi, Oni, Ekpenyong, Ajani, & Omorinkoba, 2022). Instructional delivery has therefore become more flexible, personalized, and globally connected in a way that has helped to democratize education and create learning opportunities that were previously unimaginable in the traditional classroom environment (Itasanmi, 2023).

Africa stands out as one of the most diverse continents globally, spanning more than 50 countries and hosting over 1,000 tribes and languages (Guino, 2022). Despite such diversity, Sub-Saharan African nations have been trailing behind the global average in terms of technology adoption. Nevertheless, over the past decade, the region has started to undergo a significant shift towards embracing educational technologies (Mtebe & Raphael, 2017). The internet's potential to enhance education, increase access to resources, and facilitate innovative teaching and learning methods on the continent cannot be overemphasized. Most countries have recognized knowledge and information as critical elements in enhancing productivity, improving ability to compete, and generating wealth. Therefore, ensuring higher education institutions are on par with the rapidly changing world is essential to developing globally competitive human capital (Cabaleiro-Cerviño & Vera, 2020). According to Chais, Patrícia Ganzer, and Munhoz Olea (2018), the prevailing global digital agenda underscores the need for a shift in instructional models within educational institutions to align with the requirements of the 21st-century knowledge society. This shift aims to introduce greater flexibility and integrate educational technologies to revitalize and enrich the teaching and learning experiences within formal educational settings. Therefore, Sub-Saharan Africa must transform its education system to conform to the dynamic digital learning process. Nearly every higher institution on the continent has integrated educational technologies to enhance the quality of face-to-face instruction by incorporating online and blended learning methods to boost student enrollment numbers and improve their learning experiences (Mtebe & Raphael, 2017).

In Nigeria, higher education is the lifeline of the nation's economy and is a dream for the majority of secondary school leavers to attain. While tremendous effort has been made for the past decade to expand access to higher education in the country, the tertiary gross enrolment ratio in Nigeria is low, standing at 10.2% compared to other countries in Sub-Saharan Africa such as Cape Verde, Ghana, and Senegal with 23.6%, 17.2%, and 13.1%, respectively (Kigotho, 2021). However, the country's significant population growth and improved access to both primary and secondary education suggest substantial potential for an uptick in demand for higher education (Itasanmi, Ekpenyong, et al., 2022). Similarly, a change has been noted in the characteristics of the student body, and higher institutions are being compelled to rethink their education delivery approaches based on the influx of educational technologies. Thus, to broaden access and enhance instructional quality, Nigerian universities have been embracing and utilizing diverse digital platforms (Mtebe & Raphael, 2017). Regrettably, Nigerian universities have remarkably low adoption and integration of digital learning in instructional delivery, a situation that is deeply disheartening. Many higher education institutions, as well as academic staff in the country, exhibit a conservative stance regarding the adoption of educational technologies, thereby making it almost impossible to enhance the traditional instructional delivery method (Ogwu, Emelogu, Azor, & Okwo, 2023).

However, a new global reality emerged in the realm of teaching and learning with the onset of COVID-19 in Wuhan, China, followed by its swift transmission worldwide. The pandemic brought the world's economic activities, including the education system, to a standstill (Itasanmi, et al., 2022). Numerous governments worldwide implemented regulations, resulting in either partial or complete cessation of activities involving physical interaction among people. The education sector suffered significant repercussions as educational institutions were among the first to shut down (Rajhans, Memon, Patil, & Goyal, 2020). As a response to the ravaging pandemic, many higher institutions around the world, including Nigerian universities, quickly embraced technology-enhanced teaching and learning processes. In particular, the Nigerian educational system faced severe challenges due to the pandemic, leaving the sector with no alternative but to find solutions to meet its educational needs. This was necessary as traditional face-to-face teaching and learning had been suspended in response to the pandemic (Ogwu et al., 2023). Peytcheva-Forsyth and Aleksieva (2021) contend that amid the COVID-19 pandemic, education practitioners, including lecturers, are left with no choice but to decide whether or not to adopt educational technologies. Instead, it compelled them to incorporate these technological tools in their teaching practices in order to maintain learning continuity during the pandemic period. Thus, the pandemic prompted Nigerian universities to innovate and explore new pedagogical methods by shifting from physical classes to online and remote learning (Itasanmi, et al., 2022).

Based on some of the cardinal goals of university education in Nigeria as outlined by the National Policy on Education document (Federal Republic of Nigeria, 2014) which include enhancing and broadening the scope of its programmes to meet the development of high manpower in alignment with the country's requirements, and imparting both physical and intellectual skills to students, equipping them to become self-reliant and useful contributors to society, on a large scale, national and sub-national efforts are fast emerging and evolving to support the utilization of

technologies for instructional delivery during the pandemic and post-pandemic period (Ali, 2020; Walson & Okanulgwela, 2019). Currently, universities in the country are witnessing a significant transformation in terms of acquisition of new technologies, reorientation of educational patterns, and development of skill-based learning models aimed at strengthening educational processes (Cabaleiro-Cerviño & Vera, 2020). These have therefore influenced the implementation of flexible learning modalities. As a result, there is an increasing number of students engaging in some form of technology-enhanced learning, pointing to a dramatic shift in the traditional higher education landscape. This necessitates in-depth research on different instructional modalities students prefer to inform efforts aimed at enhancing the learning experience for all students (Yen, Lo, Lee, & Enriquez, 2018).

Numerous studies conducted globally (Alseweed, 2013; Banks & Vergez, 2022; Gherheş, Stoian, Fărcaşiu, & Stanici, 2021; Hotar, Özcan, Baran, Karagöz, & Güney, 2023; Mather & Sarkans, 2018; Nasution, Surbakti, Zakaria, Wahyuningsih, & Daulay, 2021; Setyaningsih, 2020) have documented students' preferences regarding online, blended, or face-to-face learning modalities. For instance, while Atwa et al. (2022) and Nikolopoulou (2022) reported that the majority of students preferred the traditional face-to-face instructional method, (Alseweed, 2013) reported that students prefer blended learning. However, Muthuprasad, Aiswarya, Aditya, and Jha (2021) observed that the flexibility and convenience of online learning are what make it an attractive option for students. In Nigeria, only a few studies (Fola-Adebayo, 2019; Haruna, Kabara, & Enriquez, 2022) have examined students' preferences for online, blended, and face-to-face learning. These studies primarily focus on undergraduate students, neglecting postgraduate students. Specifically, there is a notable research gap regarding the nuanced interplay of technology self-efficacy and digital literacy in shaping students' preferences within the Nigerian context. So, there needs to be an empirical study that looks at how demographic factors and technology-related skills may affect people's choices about how to learn. By investigating the factors that determine graduate students' preferences for various instructional methods, the research is poised to advance theoretical understanding and provide practical insights, particularly on enhancing instructional delivery to accommodate the diverse preferences and needs of graduate students in Nigeria. This will help ensure that Nigerian universities remain pertinent in the swiftly evolving educational terrain.

The current study aims to investigate the factors that determine graduate students' preferences for online, blended, and face-to-face instructional methods in Nigeria. Specifically, the study focuses on examining factors such as age, marital status, gender, programme type, employment status, technology self-efficacy, and digital literacy. The study also seeks to answer the question: Do age, marital status, gender, programme type, employment status, technology self-efficacy, and digital literacy predict graduate students' preferences for online, blended, and face-to-face instructional delivery?

## 2. THEORETICAL FRAMEWORK: RATIONAL CHOICE THEORY

Rational Choice Theory (RCT) is a foundational framework used in many disciplines, including economics, sociology, and psychology, to understand and explain human behaviour by analyzing the decisions individuals make when faced with various options. RCT dates back centuries, with its origins attributed to the writings of Adam Smith, but it was popularized through the works of Homans (1958); Blau (1964) and Coleman (1964) on social exchange (MSW, 2020). These theorists believe that human behaviour is driven by a rational calculation of costs and benefits (Nickerson, 2021). The central tenet of RCT centers on the notion that individuals, driven by self-interest, rationally choose their options to optimize their utility (Ogu, 2013). Central to the explanation of Rational Choice Theory (RCT) are key elements encompassing individual preferences, beliefs, and constraints. Preferences denote the positive or negative evaluations individuals attach to the probable outcomes of their choices. Beliefs, on the other hand, involve perceived cause-effect relationships, including the perceived likelihood that an individual's actions will result in various outcomes. Constraints, however, establish the boundaries defining the range of feasible actions (Biersack & Darnell, 1999).

RCT is premised on certain assumptions, and these include;

1. Individualism: Individuals are the principal actors in society, taking actions and decisions that serve as a source of larger social outcomes. The individual functions as a rational agent, capable of deliberate consideration of various courses of action and intentionally choosing and executing one or more of them (Lovett, 2006; Ogu, 2013).

2. Utility maximization: This assumption holds that people maximize their utility when faced with an array of choices, and they are likely to pick an option that best serves their objectives, i.e., people have preferences that place the relative desirability of all outcomes in a clear-cut rank order (Suhi, Jabbar, Farjana, Nasrin, & Hossain, 2022).
3. Rationality: This assumption posits that individuals act in ways that would significantly benefit them. Individuals become rational when life goals are pursued by means considered effective and efficient to realize the goals (Ogu, 2013).

RCT is highly beneficial for comprehending both individual and collective behaviours, particularly in elucidating why individuals, groups, and society overall gravitate toward particular preferences grounded in distinct costs and rewards (MSW, 2020). This study found RCT very relevant because it has the potential to provide valuable insights into understanding graduate students' preferences considering the costs and benefits associated with each learning mode based on their rational calculations. The researchers assumed that for the graduate students to make choices that will maximize their utility (perceived benefit from each learning mode), they may weigh factors such as flexibility, social interaction, convenience, technological skills, and confidence and access to resources. This could therefore inform university stakeholders and managers of factors that may influence graduate students to gravitate toward one mode of learning over others. By analyzing the rational calculations and trade-offs involved in graduate students' preferences, institutions and instructors can better tailor educational offerings to meet the diverse needs and preferences of graduate students.

### 3. METHODOLOGY

#### 3.1. Research Design

The current study took a quantitative approach and used a survey method to collect data from the study's participants. Since the study aims to examine relationships among its variables, the use of a quantitative approach appeared to be well-suited for the study using a standardized survey that can facilitate data collection in a structured manner.

#### 3.2. Participants

The study's participants consist of graduate students from the University of Ibadan, a foremost provider of postgraduate education in Nigeria. The study's target population consisted of registered postgraduate students for the 2021/2022 academic session. The postgraduate college of the university recruited the participants by sending an electronic questionnaire to their registered email. The study involved 3,120 postgraduate students. A demographic examination revealed that among these participants, 66% were aged 35 years and below, while 30.5% were between the ages of 36 and 55. Additionally, over half (51.5%) of the participants were male, and 50.2% were single. Additionally, 48.7% of the participants were married while over half of them (59.2%) were employed. Further, over two-thirds of the participants (73.6%) are enrolled in master's programmes while 20.2% of them are running a PhD programme in the university.

#### 3.3. Instrument

The study employed a structured questionnaire that encompassed four domains: demographic information, technology self-efficacy, digital literacy, and learning mode preference. The demographic section gathered data on participants' age, gender, marital status, programme type, and employment status. Technology self-efficacy was assessed using an adapted scale from Kass (2014) and digital literacy was measured using an adapted scale from Liza and Andriyanti (2020). Both adapted scales utilized a five-point Likert scale ranging from strongly disagree/very low (1) to strongly agree/very high (5). A Cronbach coefficient of .73 and .85 were obtained, respectively, from a pilot testing of the 2 scales among the distance learning students of the university. The learning mode preference domain consists of a list of three instructional methods (online, blended, and face-to-face learning), and the participants were asked to choose their preferred learning method.

#### 3.4. Data Collection Procedure

Approval to conduct the study was secured from both the Department of Adult Education and the Postgraduate College of the university. The electronic questionnaire's link was then sent to students' email addresses, inviting

their voluntary participation in the study. The email succinctly outlined the study's objectives and emphasized the voluntary nature of participation. Furthermore, the questionnaire assured participants of anonymity and the confidentiality of their responses. Data collection was done within 6 weeks, starting from October 25 to December 6, 2022.

### 3.5. Data Analysis

The data collected from the study underwent analysis using SPSS and STATA software. Descriptive analysis employed frequency counts, simple percentages, and Pearson's Chi-square ( $\chi^2$ ) test of independence to determine students' learning mode preferences and examine the relationship between demographic characteristics, Technology Self-Efficacy (TSE), Digital Literacy (DL), and learning mode preference. Exploratory Factor Analysis (EFA) was conducted to identify an effective factor structure for 17 "5-point" Likert scale items. Additionally, multinomial logistic regression was employed to estimate the vector of explanatory factors associated with each set of learning mode preferences among the students. For this study, age groups were categorized as young adults ( $\leq 35$  years), middle-aged adults (36-55 years), and older adults (above 55 years). Also, the TSE and DL levels were categorized based on the obtained Weighted Average (W.A.) score of each participant:  $<2.5$ =low,  $\Rightarrow 2.5 < 4$ =average,  $4 \& \text{above}$ =high

## 4. RESULTS

Table 1 displays hows the learning preferences among the participants of the study. It can be deduced that the majority (68.4%) of the students preferred the blended learning mode of instructional delivery, while 20.2% and 11.4% preferred online and traditional face-to-face learning methods, respectively.

Table 1. Preference of learning.

Preference	Frequency	Percentage
Blended learning	2135	68.4
Online learning	630	20.2
Face-to-face learning	355	11.4

Table 2 shows the association between the participants' characteristics and their learning mode preference. The findings indicate that young adults were more interested in online learning (64.8%), while middle-aged adults preferred blended learning (66.3%) and older adults preferred face-to-face (66.8%) ( $\chi^2 = 1.46, p > 0.05$ ). It was also indicated in Table 2 that male students prioritized online learning (52.7%), blended learning (51.4%), and face-to-face learning (50.1%) ( $\chi^2 = 0.63, p > 0.05$ ). Likewise, married students showed interest in online learning (50.3%) and blended learning (49.9%), whereas single students exhibited a greater interest in face-to-face learning ( $\chi^2 = 17.21, p < 0.05$ ). It was equally observed that employed students prioritized online learning (67.9%), blended learning (58.0%), and face-to-face learning (51.0%) ( $\chi^2 = 38.97, p < 0.05$ ). In addition, it can be noted that masters' students prioritized online learning (80.0%), blended learning (70.7%), and face-to-face learning (80.0%) ( $\chi^2 = 39.60, p < 0.05$ ). Further, students with high technology self-efficacy exhibited more interest in online (65.5%) and blended learning (50.7%), while students with average technology self-efficacy opted for face-to-face ( $\chi^2 = 113.05, p < 0.062$ ). Moreover, students who possess high digital literacy skills were more interested in online learning (78.9%), blended learning (71.5%), and face-to-face (58.0%) ( $\chi^2 = 70.36, p < 0.05$ ).

### 4.1. Exploring the Learning Preference Index

An Exploratory Factor Analysis (EFA), a classical formal measurement model utilized when both observed and latent variables are assumed to be measured at the interval level, was carried out. The scree plot was utilized to ascertain the number of factors, revealing the presence of 2 factors as indicated by eigenvalues exceeding 1.0. The Kaiser-Meyer-Olkin (KMO) value stood at 0.952, while Bartlett's test of sphericity yielded  $\chi^2 = 41364.166, p < 0.001$ , suggesting adequate sampling. Table 3 outlines factor loadings, communalities ( $h^2$ ), Cronbach's alpha ( $\alpha$ ), and percentages of total variance for maximum likelihood extraction with varimax rotation ( $n = 3120$ ).

**Table 2.** Participants' attributes and their association with learning mode preference.

Variables	n (%)	Learning preference		$\chi^2$	P-value	
		Online learning	Face-to-face			
Age						
Young adults	2060 (66.0)	408 (64.8)	$\chi^2$	237 (66.8)	1.46	0.833
Middle-aged adults	952 (30.5)	203 (32.2)	$\chi^2$	106 (29.9)		
Older adults	108 (3.5)	19 (3.0)	$\chi^2$	12 (3.3)		
Gender						
Female	1512 (48.5)	298 (47.3)	$\chi^2$	177 (49.9)	0.63	0.731
Male	1608 (51.5)	332 (52.7)	$\chi^2$	178 (50.1)		
Marital						
Single	1565 (50.2)	306 (48.6)	$\chi^2$	214 (60.3)	17.21	0.002
Married	1518 (48.7)	317 (50.3)	$\chi^2$	136 (38.3)		
Divorced/ Separated	37 (1.2)	7 (1.1)	$\chi^2$	5 (1.4)		
Employment status						
Employed	1848 (59.2)	428 (67.9)	$\chi^2$	181 (51.0)	38.97	0.000
Unemployed	630 (20.2)	87 (13.8)	$\chi^2$	100 (28.2)		
Self-employed	642 (20.6)	115 (18.3)	$\chi^2$	74 (20.8)		
Programme						
Postgrad. dip	18 (0.6)	4 (0.6)	$\chi^2$	2 (0.6)	39.60	0.000
Masters	2297 (73.6)	504 (80.0)	$\chi^2$	284 (80.0)		
M.Phil	28 (0.9)	8 (1.3)	$\chi^2$	4 (1.1)		
M.Phil./PhD	148 (4.7)	29 (4.6)	$\chi^2$	8 (2.3)		
PHD	629 (20.2)	85 (13.5)	$\chi^2$	57 (16.1)		
Technology self-efficacy						
Low	70 (2.2)	6 (1.0)	$\chi^2$	24 (6.8)	113.05	0.000
Average	1429 (45.8)	211 (33.5)	$\chi^2$	205 (57.7)		
High	1621 (52.0)	413 (65.6)	$\chi^2$	126 (35.5)		
Digital literacy						
Low	118 (3.8)	32 (5.1)	$\chi^2$	8 (2.3)	70.36	0.000
Average	773 (24.8)	101 (16.0)	$\chi^2$	141 (39.7)		
High	2229 (71.4)	497 (78.9)	$\chi^2$	206 (58.0)		

**Table 3.** Results of maximum likelihood extraction with varimax rotation for factor loadings, communalities (h<sup>2</sup>), Cronbach's alpha ( $\alpha$ ), and total variance percentages (n = 3120).

Items	TSE	DL	h <sup>2</sup>
I am confident in my capability to engage in meaningful interactions through social media platforms.	0.848		0.726
I am confident in my capability to utilize technology for entertainment purposes.	0.760		0.622
I am confident in my capability to utilize Internet tools for conducting research and locating reliable articles on a given topic.	0.879		0.781
I am confident in my capability to utilize technology to craft an engaging presentation.	0.859		0.771
I am confident in my ability to effectively utilize new applications on my smartphone or tablet.	0.859		0.777
In general, how would you rate your level of digital literacy skills?		0.748	0.587



Items	TSE	DL	h <sup>2</sup>
How often do you utilize the internet, computer, multimedia, and social networks in a typical week?		0.615	0.402
What is the level of your proficiency in utilizing word processing, presentation software, web search engines, multimedia tools, and communication applications?		0.758	0.592
How would you assess the extent of your knowledge regarding digital technology matters?		0.782	0.621
How would you rate your proficiency in organizing and assessing information?		0.737	0.553
How would you assess your ability to analyze information?		0.718	0.529
How would you evaluate your proficiency in resolving technical issues with digital technology devices?		0.763	0.594
How would you rate your skill level in using digital applications?		0.833	0.716
How would you rate your proficiency in installing applications?		0.767	0.606
How would you rate your understanding of digital technology devices?		0.825	0.699
How would you rate your ability to interpret visual, auditory, and audio-visual media?		0.730	0.550
How would you rate your proficiency in installing digital technology devices?		0.793	0.641
How would you assess your proficiency in downloading and saving files from websites?		0.663	0.464
How would you rate your proficiency in using video calls or video conferencing tools?		0.679	0.489
How would you rate your proficiency in creating and editing photos and videos?		0.633	0.415

Factor 1, identified as "Technology Self-Efficacy," accounts for 41.61% of the total variance with Cronbach's  $\alpha = 0.907$ , encompassing five items regarded by students as critical indicators of confidence in technology utilization. Factor 2, labelled "Digital Literacy," comprises twelve items and explains 19.07% of the variance with an internal consistency of 0.942. Cumulatively, the two-factor measurement of learning mode preference explained 60.68% of the total variance. This suggests that there is no common method bias.

#### 4.2. Determinants of Learning Mode Preference

The multinomial logit regression model was applied, and the model parameters are outlined in Table 4. Multicollinearity and heteroscedasticity tests were performed, with results indicating the absence of multicollinearity (mean-variance inflation factor (VIF) score value =  $2.64 < 3.0$ ) and the absence of heteroscedasticity ( $\chi^2 = 806.714$ ,  $p > 0.050$ ). Face-to-face learning preference was designated as the reference category for distinguishing the relative likelihood of selecting one of the other two learning preferences.

Both the Pearson Chi-square result ( $\chi^2 = 761.380$ ,  $p > 0.05$ ) and the Deviance Chi-square result ( $\chi^2 = 771.906$ ,  $p > 0.05$ ) indicate that the model fitted well to the data. The variables age, gender, and marital status were found to be insignificant predictors as their p-values all exceeded the chosen threshold value of 0.05. However, we found that the participants' employment status was a significant predictor. Postgraduate students who are employed ( $\beta=0.398$ ,  $SE=0.180$ ,  $p<0.05$ ) and those unemployed ( $\beta=-0.510$ ,  $SE=0.216$ ,  $p<0.018$ ) were less likely to go for online learning. Also, the type of programme the students enroll in determines their learning mode preference. It was revealed that students who enrol in a Master's programme ( $\beta=0.384$ ,  $SE=0.203$ ,  $p<0.05$ ) and M.Phil/PhD programme ( $\beta=0.940$ ,  $SE=0.444$ ,  $p<0.05$ ) were less likely to choose an online learning method. Nevertheless, some master students were less likely to go for blended learning ( $\beta=0.-0.368$ ,  $SE=0.168$ ,  $p<0.05$ ). Postgraduate students' level of TSE was further shown to significantly predict their learning mode preference in the model. Students having low TSE ( $\beta=-2.379$ ,  $SE=0.500$ ,  $p<0.05$ ) and average TSE ( $\beta=-.981$ ,  $SE=0.159$ ,  $p<0.05$ ) were less likely to go for online learning. The results also showed that students with low TSE ( $\beta=-1.534$ ,  $SE=0.306$ ,  $p<0.05$ ) or having average TSE ( $\beta=-.469$ ,  $SE=0.136$ ,  $p<0.05$ ) were less likely to go for blended learning. Similarly, students' digital literacy level proves to be a significant

predictor in the model. Students with average DL were less likely to go for online learning ( $\beta=-.664$ ,  $SE=0.177$ ,  $p<0.05$ ) and at the same time were less likely to go for blended learning ( $\beta=-.423$ ,  $SE=0.140$ ,  $p<0.05$ ).

**Table 4.** Multinomial logistic regression results.

Variables		Online learning			Blended learning		
		B	SE	p-value	B	SE	p-value
Age	<=35	0.025	0.389	0.948	-0.066	0.325	0.838
	36-55	0.112	0.399	0.779	-0.070	0.334	0.833
	>=56 <sup>RC</sup>						
Gender	Female	0.133	0.139	0.338	0.083	0.118	0.482
	Male <sup>RC</sup>						
Marital status	Single	0.074	0.620	0.905	0.163	0.515	0.751
	Married	0.629	0.616	0.307	0.573	0.511	0.262
	Widowed <sup>RC</sup>						
Employment status	Employed	0.398	0.180	0.027	0.015	0.153	0.920
	Unemployed	-0.510	0.216	0.018	-0.254	0.172	0.140
	Self-employed						
Programme	Postgrad dip	0.639	0.914	0.484	-0.183	0.791	0.817
	Masters	0.384	0.203	0.059	-0.368	0.168	0.029
	M.Phil	0.703	0.682	0.303	-0.385	0.602	0.522
	M.Phil/PhD	0.940	0.444	0.034	0.527	0.397	0.184
	PHD <sup>RC</sup>						
TSE	Low	-2.379	0.500	0.000	-1.534	0.306	0.000
	Average	-0.981	0.159	0.000	-0.469	0.136	0.001
	High <sup>RC</sup>						
DL	Low	0.509	0.411	0.216	0.297	0.383	0.438
	Average	-0.664	0.177	0.000	-0.423	0.140	0.002
	High <sup>RC</sup>						

**Note:** SE=Standard error; RC=Reference category.

## 5. DISCUSSION

This study attempted to investigate factors that determine graduate student's preferences for online, blended and face-to-face instructional methods in Nigeria. The results of the study found blended learning to be the most preferred instructional method among the graduate students followed by online and face-to-face methods. This finding aligns with the research conducted by [Alseweed \(2013\)](#) and [Fola-Adebayo \(2019\)](#) but contrasts with the studies by [Atwa et al. \(2022\)](#) and [Nasution et al. \(2021\)](#) which identified face-to-face instruction as the most preferred method among students. Graduate students' preference for blended learning stems from their need to balance multiple responsibilities, including work, family, and academic commitments. Blended learning is a cost-effective option that provides flexibility, allowing graduate students to manage their time effectively ([Omran & Salari, 2012](#)). It helps them save on travel and accommodation costs while still enabling physical interactions during scheduled sessions. Additionally, it offers convenient access to course materials and allows students to complete online learning activities at their own pace. This balance of academic pursuits with other obligations makes blended learning an appealing choice. This result resonates with Rational Choice Theory, which suggests that individuals evaluate the costs and benefits of various options before making decisions ([Suhi et al., 2022](#)). In other words, people choose the option that maximizes their advantages ([Ogu, 2013](#)). It is likely that graduate students weighed the costs and benefits of different learning options and chose blended learning to maximize their interests and career goals. Regarding the association between graduate students' characteristics and their learning mode preferences, the results revealed that young adults showed more interest in online learning, middle-aged adults preferred blended learning, and older adults preferred face-to-face instruction. According to the researchers, young adults may have grown up with technology and are more comfortable using digital learning platforms compared to older adults, who are more accustomed to face-to-face instruction delivery and may feel less confident using digital tools. While young



adults may appreciate the flexibility and autonomy that online learning offers, especially regarding access to course materials and learning resources anywhere and anytime (Muthuprasad et al., 2021) older adults may appreciate the social aspect of the traditional face-to-face learning that allows them to build relationships with their classmates, engage in discussions, and directly benefit from immediate feedback and guidance from their lecturers (Kemp & Grieve, 2014). However, middle-aged adults may have preferred blended learning because of its relevance to their career development, catering to their diverse learning styles and allowing them to achieve a work-life balance. Results also revealed that married students showed interest in online learning and blended learning, whereas single students exhibited a greater interest in face-to-face learning. It is a considered opinion of the researchers that while single individuals may desire a more structured learning environment that is characterized by the traditional face-to-face instructional delivery where there is a set schedule, fixed deadlines, access to physical facilities, and regular physical interactions that foster social relationships and networking (Conole, De Laat, Dillon, & Darby, 2008), married people preferred online and blended learning to strike a balance between family obligations and their learning (Noorulhasan, Muhammad, Sanober, Rafik, & Shah, 2017). Most married people are working, have family commitments, and spend money commuting to a physical campus, but with online and blended learning, commuting frequency is reduced, they can pursue their education while still working, and they can access course materials and participate in discussions at their convenience (Noorulhasan et al., 2017).

Furthermore, the study findings revealed that students possessing high levels of technology self-efficacy demonstrated greater interest in online and blended learning methods, while those with average levels of technology self-efficacy leaned towards face-to-face instruction. Online and blended learning modalities heavily rely on digital tools and platforms, which may be more easily navigable for students who are confident in their technology skills. Consequently, students with moderate technology self-efficacy may prefer traditional face-to-face learning due to their limited confidence in using technology (Farah, 2012; Itasanmi, 2023; Karagul, Seker, & Aykut, 2021). The researchers justified these findings based on the optimality assumption of Rational Choice Theory, which posits that individuals select actions optimally based on their preferences, opportunities, and constraints at a given moment (Ogu, 2013).

The results further identified employment status, programme type, and levels of confidence in using technology and proficiency in digital skills as predictors of graduate students' preferences for online, blended, and face-to-face instructional delivery. These findings suggest that the likelihood of a graduate student choosing any instructional delivery modality is largely dependent on whether they are employed or unemployed, enrolled in a master's or MPhil/PhD programme, and possess high or low levels of confidence in using technology and proficiency in digital skills. These findings support the notion that students' preferences regarding instructional delivery methods (whether online, blended, or face-to-face) are diverse and influenced by numerous factors, including learning styles, motivation, and technological proficiency (Hood, 2013; Keshavarz & Hulus, 2019; Keskin & Yurdugül, 2019; Pan, 2020).

## 6. CONCLUSION

The current study reveals that blended learning is the most preferred instructional delivery method among graduate students. This preference indicates that graduate students favour a combination of traditional face-to-face learning and online learning to benefit from both physical interaction and the flexibility to learn at their convenience. Additionally, this approach prepares them for the evolving job market, where digital skills and remote work capabilities are becoming increasingly valuable.

The study also found that graduate students' preferences for online, blended, and face-to-face learning modalities vary based on age, marital status, employment status, programme type, and levels of technology self-efficacy and digital literacy.

Further, the study identified employment status, programme type, and levels of technology self-efficacy and digital literacy as the main predictors of graduate students' preferences for online, blended, and face-to-face instructional delivery. This study underscored the need for institutions and instructors to consider the identified factors to understand better why students may gravitate towards one mode of learning over others when designing and delivering instructional formats to meet the diverse needs and preferences of graduate students.

### 6.1. Suggestions

The results suggest that higher educational institutions should develop a flexible instructional model that integrates both face-to-face and online components to cater to the preferences of graduate students. Also, there is a need to provide comprehensive support, resources, and training opportunities to enhance easy navigation of the digital platforms used in blended learning environments for both the instructors and the graduate students. Likewise, developing the digital skills of the graduate students must be prioritized. This can be achieved by integrating it into their curricula. This will provide them with necessary skills to thrive in the changing job market. Finally, university administrators and managers should make concerted efforts to align the instructional delivery modalities with the diverse requirements of the graduate student, bearing in mind their employment status, the nature of the programme, technological self-efficacy, and digital proficiency.

### 6.2. Limitations of the Study and Suggestions for Further Studies

Generalizing the results of this study to all graduate students in Nigeria may pose challenges, as the study's sample was limited to one university among the many institutions offering graduate studies in the country. Thus, further studies should endeavour to draw a larger sample that cuts across many universities in the country using probabilistic sampling techniques for better generalization. Also, this study collected data cross-sectionally from the graduate students to provide a snapshot of their instructional method preferences and factors that may influence their choices. Further studies should adopt a longitudinal approach to capture likely changes and causality of graduate students' learning preferences over time for robust evidence of underlying factors that may help understand the subject matter better.

#### FUNDING

This study received no specific financial support.

#### INSTITUTIONAL REVIEW BOARD STATEMENT

The Ethical Committee of the University of Ibadan, Nigeria has granted approval for this study.

#### TRANSPARENCY

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

#### COMPETING INTERESTS

The authors declare that they have no competing interests.

#### AUTHORS' CONTRIBUTIONS

All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

#### ARTICLE HISTORY

Received: 12 March 2024/ Revised: 6 August 2024/ Accepted: 30 August 2024/ Published: 24 September 2024

**Copyright:** © 2024 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

#### REFERENCES

- Ali, W. (2020). Online and remote learning in higher education institutes: A necessity in light of COVID-19 pandemic. *Higher Education Studies*, 10(3), 16-25. <https://doi.org/10.5539/hes.v10n3p16>
- Alseweed, M. A. (2013). Students' achievement and attitudes toward using traditional learning, blended learning, and virtual classes learning in teaching and learning at the university level. *Studies in Literature and Language*, 6(1), 65-73.
- Atwa, H., Shehata, M. H., Al-Ansari, A., Kumar, A., Jaradat, A., Ahmed, J., & Deifalla, A. (2022). Online, face-to-face, or blended learning? Faculty and medical students' perceptions during the COVID-19 pandemic: a mixed-method study. *Frontiers in Medicine*, 9, 791352. <https://doi.org/10.3389/fmed.2022.791352>

- Banks, P. D., & Vergez, S. M. (2022). Online and in-person learning preferences during the COVID-19 pandemic among students attending the City University of New York. *Journal of Microbiology & Biology Education*, 23(1), e00012-00022. <https://doi.org/10.1128/jmbe.00012-22>
- Biersack, A., & Darnell, R. (1999). Ecologies for tomorrow: Reading Rappaport today. *American Anthropologist*, 101(1), 5–122.
- Blau, P. M. (1964). *Exchange and power in social life*. New York: Wiley.
- Cabaleiro-Cerviño, G., & Vera, C. (2020). The impact of educational technologies in higher education. *GIST Education and Learning Research Journal*, 20, 155-169.
- Chais, C., Patrícia Ganzer, P., & Munhoz Olea, P. (2018). Technology transfer between universities and companies: Two cases of Brazilian universities. *Innovation & Management Review*, 15(1), 20-40. <https://doi.org/10.1108/inmr-02-2018-002>
- Coleman, J. S. (1964). Collective decisions. *Sociological Inquiry*, 34(2), 166–181. <https://doi.org/10.1111/j.1475-682x.1964.tb00581.x>
- Conole, G., De Laat, M., Dillon, T., & Darby, J. (2008). ‘Disruptive technologies’, ‘pedagogical innovation’: What’s new? Findings from an in-depth study of students’ use and perception of technology. *Computers & Education*, 50(2), 511-524. <https://doi.org/10.1016/j.compedu.2007.09.009>
- Farah, A. C. (2012). Factors influencing teachers’ technology self-efficacy: A case study. Liberty University. ProQuest Dissertations and Theses.
- Federal Republic of Nigeria. (2014). *National policy on education*. Abuja: NERDC.
- Fola-Adebayo, T. J. (2019). Perceptions of undergraduates on the relationship between exposure to blended learning and online critical literacy skills. *Reading & Writing-Journal of the Reading Association of South Africa*, 10(1), 1-9. <https://doi.org/10.4102/rw.v10i1.200>
- Gherheș, V., Stoian, C. E., Fărcașiu, M. A., & Stanici, M. (2021). E-learning vs. face-to-face learning: Analyzing students’ preferences and behaviors. *Sustainability*, 13(8), 4381. <https://doi.org/10.3390/su13084381>
- Guino, A. (2022). *Why is Africa lagging behind the world in technology?* AFR-IX Telecom. Retrieved from <https://afr-ix.com/why-is-africa-lagging-behind-the-world-in-technology/>
- Haruna, H. A., Kabara, M. Y., & Enriquez, A. (2022). Face-to-face, online, or hybrid learning in post COVID-19 recovery? Scrutinizing Nigerian students’ preferences. *Journal of Educational Management and Instruction*, 2(2), 63-74. <https://doi.org/10.22515/jemin.v2i2.5026>
- Homans, G. C. (1958). Social behavior as exchange. *American Journal of Sociology*, 63(6), 597-606. <https://doi.org/10.1086/222355>
- Hood, M. (2013). Bricks or clicks? Predicting student intentions in a blended learning buffet. *Australasian Journal of Educational Technology*, 29(6), 1-15. <https://doi.org/10.14742/ajet.415>
- Hotar, N., Özcan, M. A., Baran, B., Karagöz, E., & Güney, L. Ö. (2023). Face-to-face, online or hybrid, which model is preferred by university students and why? *Journal of Learning and Teaching in Digital Age*, 8(2), 176-186. <https://doi.org/10.53850/joltida.1125339>
- Itasanmi, S. A. (2023). Determinants of the behavioural intention of open distance learning students to use digital tools and resources for learning in Nigeria. *Journal of Adult and Continuing Education*, 29(1), 124-146. <https://doi.org/10.1177/14779714221135655>
- Itasanmi, S. A., Ekpenyong, V. O., Akintolu, M., & Ajani, O. A. (2022). A predicting analysis of academic staff’s motivation to teach online in a Nigerian university. *Electronic Journal of E-Learning*, 20(3), pp284-295. <https://doi.org/10.34190/ejel.20.3.2123>
- Itasanmi, S. A., Oni, M. T., Ekpenyong, V. O., Ajani, O. A., & Omorinkoba, O. G. (2022). Academic staff’s motivation for online teaching in Nigerian universities: Empirical evidence from the university of Ibadan. *International Journal of Learning, Teaching and Educational Research*, 21(7), 345-365. <https://doi.org/10.26803/ijlter.21.7.18>
- Josep, G. (2020). (5). *Reasons why online learning is the future of education*. *Educations Media Group*. Retrieved from <https://www.educations.com/articles-and-advice/5-reasons-online-learning-is-future-of-education-17146>
- Karagul, I. B., Seker, M., & Aykut, C. (2021). Investigating students’ digital literacy levels during online education due to COVID-19 pandemic. *Sustainability*, 13(21), 11878. <https://doi.org/10.3390/su132111878>
- Kass, K. (2014). *Computer self-efficacy: Instructor and student perspectives in a university setting*. Retrieved from <https://dr.lib.iastate.edu/server/api/core/bitstreams/90b88d7c-f184-40b2-b2d5-eb49fbd794f7/content>
- Kemp, N., & Grieve, R. (2014). Face-to-face or face-to-screen? Undergraduates’ opinions and test performance in classroom vs. online learning. *Frontiers in Psychology*, 5, 1278. <https://doi.org/10.3389/fpsyg.2014.01278>
- Keshavarz, M. H., & Hulus, A. (2019). The effect of students’ personality and learning styles on their motivation for using blended learning. *Advances in Language and Literary Studies*, 10(6), 78-88. <https://doi.org/10.7575/aiac.all.v.10n.6p.78>
- Keskin, S., & Yurdugül, H. (2019). Factors affecting students’ preferences for online and blended learning: Motivational vs. cognitive. *European Journal of Open, Distance and E-Learning (EURODL)*, 22(2), 72-86. <https://doi.org/10.2478/eurodl-2019-0011>

- Kigotho, W. (2021). *Small island states lead the way in tertiary enrolments*. *University World News*. Retrieved from <https://www.universityworldnews.com/post.php?story=20210203120517283>
- Liza, K., & Andriyanti, E. (2020). Digital literacy scale of English pre-service teachers and their perceived readiness toward the application of digital technologies. *Journal of Education and Learning (EduLearn)*, 14(1), 74-79. <https://doi.org/10.11591/edulearn.v14i1.13925>
- Lovett, F. (2006). Rational choice theory and explanation. *Rationality and Society*, 18(2), 237-272. <https://doi.org/10.1177/1043463106060155>
- Mather, M., & Sarkans, A. (2018). Student perceptions of online and face-to-face learning. *International Journal of Curriculum and Instruction*, 10(2), 61-76.
- MSW. (2020). *What is rational choice theory? - Social work theories & approaches*. Retrieved from <https://www.onlinemswprograms.com/social-work/theories/rational-choice-theory/>
- Mtebe, J., & Raphael, C. (2017). A decade of technology enhanced learning at the University of Dar es Salaam, Tanzania: Challenges, achievements, and opportunities. *International Journal of Education and Development using ICT*, 13(2), 103-115.
- Muthuprasad, T., Aiswarya, S., Aditya, K. S., & Jha, G. K. (2021). Students' perception and preference for online education in India during COVID-19 pandemic. *Social Sciences & Humanities Open*, 3(1), 100101. <https://doi.org/10.1016/j.ssaho.2020.100101>
- Nasution, A. K. P., Surbakti, A. H., Zakaria, R., Wahyuningsih, S. K., & Daulay, L. A. (2021). Face to face learning vs blended learning vs online learning (Student Perception of Learning). *Journal of Physics: Conference Series*, 1783(1), 012112. <https://doi.org/10.1088/1742-6596/1783/1/012112>
- Nickerson, C. (2021). *Rational choice theory*. Retrieved from <https://www.simplypsychology.org/rational-choice-theory.html>
- Nikolopoulou, K. (2022). Face-to-face, online and hybrid education: University students' opinions and preferences. *Journal of Digital Educational Technology*, 2(2), ep2206. <https://doi.org/10.30935/jdet/12384>
- Noorulhasan, Q., Muhammad, A., Sanober, S., Rafik, M., & Shah, A. (2017). A mixed method study for investigating critical success factors (CSFs) of E-learning in Saudi Arabian universities. *International Journal of Advanced Computer Science and Applications*, 8(5), 1-8. <https://doi.org/10.14569/ijacsa.2017.080522>
- Ogu, M. I. (2013). Rational choice theory: Assumptions, strengths and greatest weaknesses in application outside the western milieu context. *Arabian Journal of Business and Management Review (Nigerian Chapter)*, 1(3), 90-99. <https://doi.org/10.12816/0003628>
- Ogwu, E. N., Emelogu, N. U., Azor, R. O., & Okwo, F. A. (2023). Educational technology adoption in instructional delivery in the new global reality. *Education and Information Technologies*, 28(1), 1065-1080. <https://doi.org/10.1007/s10639-022-11203-4>
- Omran, S. E., & Salari, Z. (2012). Blended learning a new approach in developing teaching and learning process. *Education Strategies in Medical Sciences*, 5(1), 69-75.
- Pan, X. (2020). Technology acceptance, technological self-efficacy, and attitude toward technology-based self-directed learning: Learning motivation as a mediator. *Frontiers in Psychology*, 11, 564294. <https://doi.org/10.3389/fpsyg.2020.564294>
- Peytcheva-Forsyth, R., & Aleksieva, L. (2021). *Forced introduction of e-assessment during COVID-19 pandemic: How did the students feel about that? (Sofia University case)*. Paper presented at the AIP Conference Proceedings.
- Rajhans, V., Memon, U., Patil, V., & Goyal, A. (2020). Impact of COVID-19 on academic activities and way forward in Indian Optometry. *Journal of Optometry*, 13(4), 216-226. <https://doi.org/10.1016/j.optom.2020.06.002>
- Setyaningsih, E. (2020). Face to face or online learning: Students' perspectives on blended learning in Indonesia. *Journal of English Language Studies*, 5(1), 1-14. <https://doi.org/10.30870/jels.v5i1.6256>
- Suhi, S. S., Jabbar, M. A., Farjana, F., Nasrin, N., & Hossain, M. T. (2022). Factors affecting social science students' career choices: A web-based cross-sectional study in Bangladesh. *Education Research International*, 2022(1), 2765246. <https://doi.org/10.1155/2022/2765246>
- Walson, O. B. A., & Okanu-Igwela, J. N. B. (2019). *Issues, challenges and prospects in the use of educational technology for instructional delivery in the management of 21st university education in Nigeria*. Paper presented at the ADECT 2019 Proceedings.
- Yen, S.-C., Lo, Y., Lee, A., & Enriquez, J. (2018). Learning online, offline, and in-between: Comparing student academic outcomes and course satisfaction in face-to-face, online, and blended teaching modalities. *Education and Information Technologies*, 23, 2141-2153. <https://doi.org/10.1007/s10639-018-9707-5>