JOURNAL OF MULTIDISCIPLINARY ISSUES
Journal Website: www.jmis.site
J. Multidisc. Issues 4(1) 30 - 47 (2024)

Exploring Gen-Z Learning Preferences: A Comparative Study of Traditional, Online, and Blended Learning Models

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Abstract

Purposes - The primary objectives of this research are to explore Gen-Z's preferred learning environments, identify the factors influencing their choices, and uncover the challenges and opportunities associated with each learning model. Additionally, the study aims to provide actionable insights for educational policy-making and practice.
Methodology - A quantitative research approach was employed, utilizing surveys distributed to a diverse sample of Gen-Z students aged 18-24 currently enrolled in higher education. The survey collected data on participants' preferences, engagement levels, and the effectiveness of different learning models. Statistical analyses were performed to assess the relationships between the variables.
Findings - The findings reveal that Gen-Z shows a strong preference for online and blended learning models over traditional classroom settings. The study highlights the significant impact of elements such as connectivism and constructivism on learning model effectiveness, while factors like student engagement and participant information also play moderate roles. However, the direct influence of knowledge acquisition on the choice of learning model was found to be minimal.
Novelty - This research contributes to the limited academic literature on Gen-Z learning preferences by focusing on the comparative effectiveness of different educational models. The study provides a contemporary understanding of how digital natives interact with learning environments, offering insights that are crucial for developing future educational strategies.
Research Implications - The study's results have practical implications for educators and policymakers. By aligning teaching methods with Gen-Z's preferences, educational institutions can enhance student engagement and learning outcomes. Furthermore, the research underscores the need for integrating technology into education and preparing for future shifts in learning trends among younger generations.

Keywords: Gen-Z, Learning Preferences, Online Learning, Blended Learning, Traditional Classroom, Educational Policy, Connectivism, Constructivism

JEL Classification: D23, D83, F63, H11, O32
Article Info: *Received 13 July 2023, Revised December 2023, Accepted 1 January 2024*
Article Correspondence: elfindah.princes@binus.ac.id
Recommended Citation: Princes et al. (2024). *Exploring Gen-Z Learning Preferences: A Comparative Study of Traditional, Online, and Blended Learning Model*. Journal of Multidisciplinary Issues, Issues 3(1) 30-47

JOURNAL OF MULTIDISCIPLINARY ISSUES
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I. INTRODUCTION

The educational landscape has undergone transformative changes with the emergence of Generation Z (Gen-Z), a group characterized by digital nativism and unique preferences across various aspects of life, including education. Born between 1997 and 2013, Gen-Z has entered a world where technology plays a crucial role in communication, information access, and social interaction. As this generation enters formal education systems, it becomes essential to understand how their learning preferences align with available educational models—traditional classrooms, fully online learning, and blended learning. This generation exhibits distinctive preferences, behaviors, and attitudes toward learning, raising intriguing questions about the most effective learning models for them (Mohr & Mohr, 2017).

Traditional classroom learning, fully online learning, and blended learning (a combination of face-to-face and online components) are the main educational models available. However, understanding how Gen-Z engages with and chooses these models is crucial for educators, policymakers, and educational institutions to adapt and enhance the learning experience (Mosca et al., 2019).

This study will employ a quantitative research approach. Surveys will be distributed to a diverse sample of Gen-Z learners to collect quantitative data on their preferences, experiences, and performance across different learning models.

Responding to the evolving educational landscape shaped by Generation Z (Gen-Z), this research addresses key aspects of modern learning paradigms. The traditional classroom, long considered the cornerstone of education, is undergoing reevaluation due to Gen-Z's tech-savvy nature. This study aims to outline how this generation engages with online and blended learning models, recognizing the importance of adapting educational practices to their evolving preferences. This is a critical step in understanding the changing dynamics of education in the digital era.

Furthermore, this study explores Gen-Z's familiarity with technology, examining the role of digital tools in education. By uncovering their preferences, educators and institutions can determine the optimal level of technology integration to foster effective learning experiences. The study also highlights the importance of personalized learning, aiming to identify the diverse preferences of Gen-Z and tailor educational approaches accordingly, thus enhancing engagement and ensuring a more personalized and effective learning journey (Thejovathi & Krishnan, 2020). Additionally, the investigation into Gen-Z's acceptance of fully online learning (Yunus, 2021), the dynamics of social interaction and collaboration (Hendrastomo & Januarti, 2023), and the efficacy of blended learning models provides valuable insights for educators and policymakers as they navigate the challenges and opportunities presented by global technology-driven educational landscapes (Di'amah et al., 2023).

This research seeks to delve into the learning preferences of Generation Z, aiming to uncover whether they favor traditional classroom settings, fully online learning environments, or a combination of both. By examining the factors that influence their preferences—such as technological familiarity, social interaction, and individual learning styles—the study aspires to gain a comprehensive understanding of what drives Gen-Z's educational choices.

Another key objective of this research is to identify the specific challenges and opportunities associated with each learning model. For instance, while online learning offers flexibility, it may also lead to distractions, whereas traditional classrooms might lack the dynamic social interaction that technology-savvy students crave. By exploring how technology and innovative pedagogical strategies can be harnessed to address these challenges, the study aims to propose solutions that could enhance the overall learning experience for Gen-Z.

Furthermore, the research seeks to provide actionable insights to educational policymakers. The findings are intended to inform the development of policies and practices that better align learning environments with the unique preferences and needs of Generation Z. This includes offering recommendations for curriculum design, teacher training, and the integration of technology in education, ensuring that educational practices evolve in tandem with the changing demands of this generation.

The outcomes of this research have the potential to significantly enhance the educational experience for Generation Z. By understanding and catering to their preferences, educational institutions can create more engaging and effective learning environments, which could lead to improved academic performance and greater student satisfaction.

The insights gained from this study will also enable stakeholders—such as educational institutions, policymakers, and educators—to make informed decisions that align teaching methods with Gen-Z's preferences. This alignment can optimize the allocation of resources, such as technological infrastructure and teacher training programs, ensuring that investments are directed towards the most effective learning models for this generation.

Moreover, the research aims to prepare educational systems for future trends by anticipating shifts in learning preferences among younger generations. This foresight will allow for proactive adjustments, keeping educational practices relevant and effective as the landscape continues to evolve.

Finally, this research will contribute to the broader academic literature on generational learning preferences. The findings will provide valuable resources for future researchers and educators interested in developing educational approaches tailored to the specific needs and preferences of different generations, ensuring that education remains responsive and impactful across varying demographic groups.

II. LITERATURE REVIEW

Theoretical Framework

Table 1. Learning Theories Table.

Theory	Online Learning	On-Class Learning	Blended Learning
1. Constructivism (Koohang et al., 2009)	Independent activities in online exploration can enrich individual knowledge construction.	Social interaction and collaboration in a classroom setting provide direct experience and peer	The combination of online and face-to-face learning creates opportunities for independent experience

Theory	Online Learning	On-Class Learning	Blended Learning
	Interaction with digital content supports learner-guided learning.	support, facilitating knowledge construction.	and social interaction, aligning with constructivist principles.
2. Connectivism (Kropf, 2013)	Online learning creates a network of information and digital connections consistent with connectivism principles, promoting access to knowledge through digital networks.	In-class face-to-face learning can build social connectivity and direct engagement, supporting the cognitive and social aspects of connectivism.	Blended learning leverages the strengths of both online and face-to-face learning, creating a network of digital connections and opportunities for classroom social interaction.
3. Self-Determination Theory (Martin, 2017)	Online learning provides autonomy for learners to manage their own learning paths, supporting the need for independence.	Social interaction in the classroom meets the human need for connection, while direct instruction provides structure and competence.	Blended learning combines the autonomy of online learning with social interaction and direct guidance, fulfilling the needs for autonomy, social connection, and competence.
4. Community of Inquiry Framework (Shea, 2022)	Social interaction and online collaboration can build a digital learning community, meeting the need for social presence.	Face-to-face classroom learning supports the formation of a learning community with direct interaction between students and instructors.	Blended learning integrates elements of social presence through both face-to-face and online interaction, strengthening the formation of a learning community.
5. Multiple Intelligences Theory (Morgan, 2021)	Online learning can accommodate various intelligences through the use of multimedia, simulations, and online projects.	Face-to-face classroom learning provides opportunities to develop interpersonal and intrapersonal intelligences through direct interaction and collaboration.	Blended learning combines the strengths of online and face-to-face learning, facilitating the development of multiple intelligences through multimedia experiences and social interaction.
6. Cognitive Load Theory (Paas & van Merriënboer, 2020)	Online learning can be designed to manage cognitive load by utilizing multimedia and designs that facilitate understanding.	Face-to-face classroom learning can minimize cognitive load with direct instruction and guidance.	Blended learning is designed to optimize cognitive load, combining online elements that support understanding with

Theory	Online Learning	On-Class Learning	Blended Learning
			direct interactions that reinforce concepts.

Previous Studies

Yunus (2021, p. 251) mentions that Gen-Z demonstrates a high acceptance of technology in learning, including e-learning, mobile learning, and blended learning. Gen-Z learners frequently use social media and technology in their learning processes. They utilize online platforms like YouTube to seek knowledge and learn new skills (Hendrastomo & Januarti, 2023).

Research by Persada et al. (2020) shows a preference for Learner-Generated Content as a learning tool. Given their comfort and familiarity with the internet and digital technology, these learners feel at ease using collaborative platforms like YouTube, Blogs, Wikis, Quora, and other platforms that allow Learner-Generated Content. They are stimulated by active and collaborative learning, finding value in knowledge sharing and the "learning by teaching" approach.

According to Hernandez-de-Menendez et al. (2020), Gen-Z is known as digital natives who are always connected and perform activities quickly, including decision-making. They are highly technology-oriented, with many expressing a desire to pursue careers related to technology. Gen-Z spends a significant amount of time interacting in digital environments, with YouTube videos being their preferred platform. They also create and share their own digital content across various platforms, and digital gaming and communication are important to them.

Gen-Z's learning preferences are heavily influenced by their engagement with digital technology (Alruthaya et al., 2021). Being accustomed to a world of online resources like Google and social media platforms, they rely on digital tools for learning and research. Their interest in visual content over text, their preference for observational and hands-on learning, and their desire for instant feedback reflect their technology-driven upbringing. Capable of multitasking, they thrive in environments that seamlessly integrate technology into the learning process, seeking methodologies that are visual, interactive, and provide direct access to educational materials.

Research by Marcus et al. (2022) concluded that they successfully developed an initial model to understand Generation Z's acceptance of e-learning technology during the COVID-19 pandemic, based on the Technology Acceptance Model and eight additional factors identified as significant. These factors are Compatibility, Perceived Interaction, Perceived Cognitive Absorption, Perceived Usefulness, Service Quality, System Quality, Accessibility, and Information Quality.

Paulina & Ernawati (2022) in their research state that Gen-Z prefers the integration of technology into their learning process. They actively use social media and other online tools to learn and interact with peers and teachers. They value hands-on experiences during courses. In higher education, they respond well to blended learning strategies and flipped classrooms that

emphasize active learner engagement. The use of digital tools in teaching and these strategies help effectively engage Gen-Z learners and prepare them for entering the future workforce.

Research conducted by Di'amah et al. (2023) concluded that Generation Z students prefer engaging learning environments that balance theory and practice, are managed by ideal instructors, and employ blended learning methods. These findings highlight the need for educational strategies aligned with these preferences in the post-pandemic era.

Muhtadi et al. (2022), in their research, discuss the learning independence of Gen-Z students during online learning. It was found that these students typically exhibit confidence, discipline, responsibility, initiative, and good self-control.

According to Persada et al. (2019), Generation Z's intention to engage in digital learning is heavily influenced by facilitating conditions such as the ease of the system and their level of understanding of the digital learning system. Specifically:

- 34% of respondents use digital learning to learn things beyond their formal education.
- 23.33% use digital learning as their primary educational resource.
- 15.33% use digital learning as a complement to their main education.
- 14.67% engage in digital learning because it is mandatory.
- 12.67% use digital learning for entertainment purposes.

The three most commonly used media for digital learning are educational videos, university e-learning platforms, and paid courses. These findings indicate that Generation Z has a preference for resource-based, easily accessible, and self-directed learning styles.

According to Giray (2022), Generation Z, also known as Centennials, prefers active engagement in the learning process. They do not like being passive learners or merely vessels filled with information. Instead, they prefer to interact with their instructors, desiring direct involvement in learning. They value learning by doing and enjoy activities that allow them to engage actively.

Research Hypothesis

The hypothesis (H0) posited here is that Gen-Z prefers online and blended learning patterns over face-to-face learning.

III. RESEARCH METHODOLOGY

Research Steps:

1. Background, Objectives, Benefits, and Hypothesis

The first step in this research involves clearly defining the background, objectives, benefits, and the hypothesis of the study. This foundational work sets the context for the research, ensuring that the purpose and expected outcomes are well-articulated. The hypothesis is carefully formulated to guide the investigation and focus the analysis on the key aspects of Gen-Z's learning preferences.

2. Literature Review

A comprehensive literature review is conducted to explore existing studies on the learning preferences of Generation Z, with particular emphasis on classroom, online, and blended learning environments. This review helps to establish a theoretical framework, identify gaps in the current research, and position this study within the broader academic discourse.

3. Research Design

The research design is carefully chosen to align with the stated objectives of the study. A survey-based approach is selected as the most suitable method to collect data from Gen-Z participants. The design includes defining key variables such as preferred learning environments, levels of engagement, and favored teaching methods. This step ensures that the research questions are effectively addressed through the chosen methodology.

4. Sample Selection

The target population for this study is defined as Gen-Z students aged 18-24 who are currently enrolled in higher education. A random or stratified sampling method is employed to select participants, ensuring that the sample is representative of various demographic groups and educational backgrounds. This approach enhances the generalizability of the research findings.

5. Instrument Development

A survey questionnaire is developed to capture the learning preferences of Gen-Z. The questionnaire includes items designed to assess preferences for classroom, online, and blended learning environments. Validated scales are used where applicable, and new questions are crafted based on insights from the literature review. The survey covers aspects such as multimedia learning, interactivity, accessibility, engagement, and learning outcomes.

6. Data Collection

The survey is administered to the selected sample, with strict adherence to ethical guidelines to ensure participant anonymity and confidentiality. A sample size of 50 or more is targeted to achieve statistical significance and ensure that the findings are representative of the broader Gen-Z population.

7. Data Analysis

Statistical analysis methods are employed to analyze the data collected from the survey. The analysis focuses on comparing the preferences for classroom, online, and blended learning environments among Gen-Z participants. The results are interpreted in the context of the research objectives and hypothesis.

8. Interpretation and Reporting

The findings are interpreted to provide meaningful insights into Gen-Z's learning preferences. A detailed report is prepared, outlining the methodology, results, conclusions, and recommendations. This report serves as the final output of the research, offering actionable insights for educators and policymakers.

9. Drawing Conclusions

The research methodology concludes with a discussion of the limitations of the study and suggestions for future research. Potential biases or constraints in the research design are acknowledged, and areas where further investigation is needed are identified, paving the way for subsequent studies to build on these findings.

IV. FINDINGS, RESULT, AND DISCUSSSION

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Descriptive Analysis

Question	Response Options	Percentage	Interpretation
1. What is your age?	18-20 years	5.9%	Most respondents are in the 25-29 age group.
	21-24 years	33.3%	
	25-29 years	60.8%	
	30 or more years	0%	
2. What is your current level of education?	High School	7.8%	The majority are undergraduate students.
	Undergraduate (Sarjana)	86.3%	
	Postgraduate (Pascasarjana)	5.9%	
3. On average, how many hours per week do you spend using digital devices for educational purposes?	<5 hours	3.9%	Most respondents spend more than 15 hours per week using digital devices for education.
	5-10 hours	0%	
	10-15 hours	15.7%	
	>15 hours	80.4%	
4. What is your primary preferred learning environment?	Traditional Face-to-Face Learning	0%	A strong preference for fully online and blended learning environments is observed.
	Fully Online Learning	60.8%	
	Blended Learning (combination of face-to-face and online)	39.2%	
5. How often do you attend face-to-face learning sessions, if any?	1 (Never)	0%	The frequency of attending face-to-face sessions is moderate, with a significant portion attending somewhat regularly.
	2	29.4%	
	3	45.1%	
	4	9.8%	
	5 (Always)	15.7%	
6. How would you rate your experience with fully online learning platforms?	1 (Very Poor)	2%	Respondents generally have a positive experience with fully online learning platforms.
	2	2%	
	3	2%	
	4	29.4%	
	5 (Very Good)	64.7%	
7. How connected do you feel with your peers through digital platforms in your learning environment?	1 (Not at all)	2%	Most respondents feel well-connected with peers through digital platforms.
	2	0%	
	3	5.9%	

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Question	Response Options	Percentage	Interpretation
	4	47.1%	
	5 (Very connected)	45.1%	
8. How often are you involved in online collaborative projects or discussions?	1 (Never)	2%	A majority of respondents are frequently involved in online collaborative projects or discussions.
	2	0%	
	3	13.7%	
	4	43.1%	
	5 (Very often)	41.2%	

Inferential Analysis

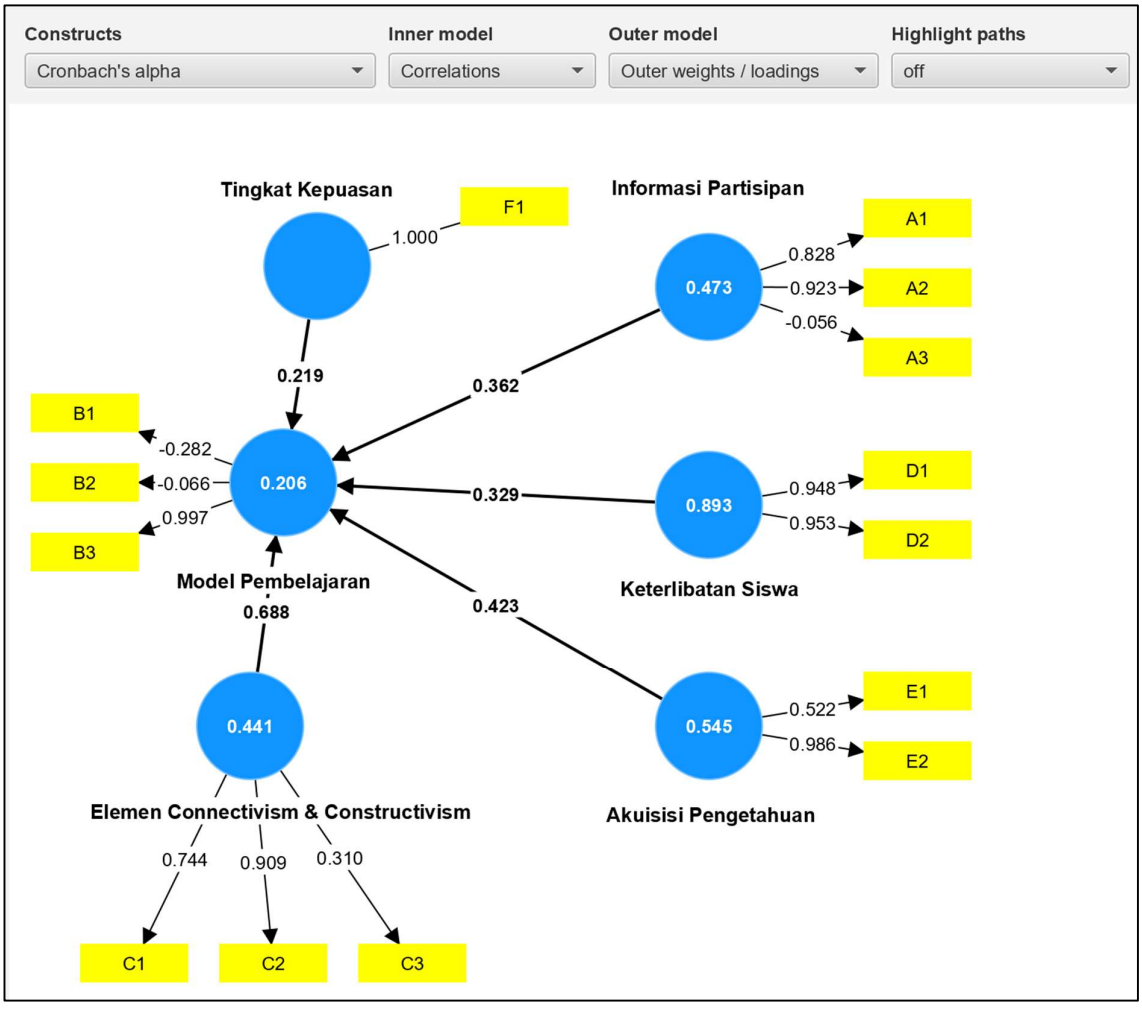

Figure 1. Model SEM-PLS

This table shows the path coefficients, indicating the strength and direction of the relationships between variables in the model.

Table 1 Path Coefficient List

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Path	Path Coefficient
Knowledge Acquisition → Learning Model	0.025
Elements of Connectivism & Constructivism → Learning Model	0.573
Participant Information → Learning Model	0.289
Student Engagement → Learning Model	0.154
Satisfaction Level → Learning Model	0.050

The path coefficients provide insight into the strength and direction of the relationships between variables within the model. The following key observations can be made:

- **Elements of Connectivism & Constructivism → Learning Model** has the highest path coefficient (0.573), indicating a strong positive influence. This suggests that the incorporation of connectivism and constructivist elements is a significant predictor of the effectiveness of the learning model.
- **Participant Information → Learning Model** has a moderate path coefficient (0.289), indicating that the information provided by participants has a positive, but less substantial, impact on the learning model.
- **Student Engagement → Learning Model** (0.154) and **Satisfaction Level → Learning Model** (0.050) both show positive but relatively weak relationships, suggesting that while these factors are relevant, they do not contribute as strongly as the connectivism and constructivism elements.
- **Knowledge Acquisition → Learning Model** has the weakest path coefficient (0.025), indicating that direct knowledge acquisition may have a minimal impact on the overall learning model compared to other factors.

Table 2 R-square Result

Dependent Variable	R-square	R-square Adjusted
Learning Model	0.571	0.523

The R-square value indicates how well the independent variables explain the variance in the dependent variable, which in this case is the Learning Model.

An R-square value of **0.571** suggests that 57.1% of the variance in the Learning Model is explained by the independent variables in the model. This is a moderate to strong level of explanatory power, indicating that the model is fairly effective in capturing the factors that influence the learning model.

The adjusted R-square value of **0.523** takes into account the number of predictors in the model relative to the number of data points, slightly adjusting the explanatory power downward. This adjustment is typical in models with multiple predictors.

Table 4. f-square Values

Path	f-square
Knowledge Acquisition → Learning Model	0.001
Elements of Connectivism & Constructivism → Learning Model	0.564

Path	f-square
Participant Information → Learning Model	0.180
Student Engagement → Learning Model	0.042
Satisfaction Level → Learning Model	0.005

The f-square values measure the effect size of each predictor variable on the dependent variable.

- **Elements of Connectivism & Constructivism** have a large effect size (0.564), indicating that this factor substantially contributes to the learning model.
- **Participant Information** shows a medium effect size (0.180), suggesting that this variable has a moderate impact on the learning model.
- **Student Engagement** has a small effect size (0.042), indicating that it contributes to the learning model but not as strongly as the other factors.
- **Knowledge Acquisition** and **Satisfaction Level** both have very small effect sizes (0.001 and 0.005, respectively), suggesting that their direct impact on the learning model is minimal.

Table 5. Reliability and Validity Parameters

Construct	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Knowledge Acquisition	0.545	1.768	0.751	0.622
Elements of Connectivism & Constructivism	0.441	0.656	0.717	0.492
Participant Information	0.473	0.733	0.663	0.513
Student Engagement	0.893	0.894	0.949	0.903
Learning Model	0.206	1.107	0.180	0.359

This table assesses the reliability and validity of the constructs used in the model.

- **Cronbach's Alpha**: Values below 0.7 are typically considered questionable, indicating potential issues with internal consistency. Most constructs in this table fall below this threshold, suggesting that the reliability of these constructs may be a concern.
- **Composite Reliability (rho_a and rho_c)**: These values also indicate reliability, with higher values being better. Again, most values here are low, indicating potential problems with the reliability of the measurement model.
- **Average Variance Extracted (AVE)**: Values above 0.5 are generally considered acceptable, as they indicate that more than 50% of the variance in the construct is due to the indicators rather than error. Some constructs meet this criterion (e.g., Knowledge Acquisition), while others do not (e.g., Learning Model), indicating mixed results in terms of validity.

Table 6. Discriminant Validity (HTMT Matrix)

Construct	1	2	3	4	5	6
Knowledge Acquisition	1.000	0.963	0.377	0.685	0.417	0.379
Elements of Connectivism & Constructivism	0.963	1.000	0.450	0.508	0.742	0.367
Participant Information	0.377	0.450	1.000	0.184	0.703	0.216
Student Engagement	0.685	0.508	0.184	1.000	0.395	0.134
Learning Model	0.417	0.742	0.703	0.395	1.000	0.366
Satisfaction Level	0.379	0.367	0.216	0.134	0.366	1.000

The HTMT matrix assesses discriminant validity, which ensures that constructs are distinct from one another.

- **Values above 0.85** typically indicate a lack of discriminant validity, meaning that the constructs may not be sufficiently distinct. The value between **Knowledge Acquisition** and **Elements of Connectivism & Constructivism** (0.963) is above this threshold, suggesting these two constructs may overlap significantly and could be measuring similar aspects.
- Other construct pairs mostly have values below 0.85, indicating good discriminant validity between these constructs.

Table 7. Total Effects

Path	Total Effect
Knowledge Acquisition → Learning Model	0.025
Elements of Connectivism & Constructivism → Learning Model	0.573
Participant Information → Learning Model	0.289
Student Engagement → Learning Model	0.154
Satisfaction Level → Learning Model	0.050

The total effects show the overall influence (direct and indirect) of each independent variable on the dependent variable.

- **Elements of Connectivism & Constructivism** has the strongest total effect (0.573) on the Learning Model, reinforcing the earlier findings that this is the most significant factor in the model.
- **Participant Information** and **Student Engagement** also have notable total effects (0.289 and 0.154, respectively), though less impactful than the connectivism and constructivism elements.
- **Knowledge Acquisition** and **Satisfaction Level** have minimal total effects, suggesting that these factors play a much smaller role in the learning model.

Table 8. Model Fit

Fit Index	Saturated Model	Estimated Model
SRMR	0.123	0.123
d_ULS	1.584	1.584
d_G	0.642	0.642
Chi-square	165.933	165.933
NFI	0.439	0.439

The model fit indices assess how well the overall model fits the data.

- **SRMR**: A value of 0.123 is above the typical threshold of 0.08, indicating that the model may not have an ideal fit.
- **d_ULS and d_G**: These are additional fit measures, but without specific benchmarks, it's hard to assess their adequacy from these values alone.
- **Chi-square**: The value itself is high, and along with a lower NFI (0.439), suggests that the model may have issues with fit.
- **NFI**: A value of 0.439 is below the acceptable threshold (usually around 0.90), indicating poor model fit.

Table 9. Model Selection Criteria

Model	BIC (Bayesian Information Criterion)
Learning Model	-20.548

The BIC is a criterion used for model comparison, with lower values indicating a better fit. The **BIC value of -20.548** suggests that the model might be relatively parsimonious, but it is difficult to assess without comparing it to other models. In general, BIC is used to compare multiple models, so this number is more informative when viewed in context with other models.

Overall Analysis:

The analysis suggests that the **Elements of Connectivism & Constructivism** are the most significant factors influencing the learning model, with substantial path coefficients, f-square values, and total effects. **Participant Information** and **Student Engagement** also contribute, but to a lesser extent.

However, the model has some challenges, particularly in terms of reliability and discriminant validity, as indicated by the low Cronbach's alpha and the HTMT ratio. Additionally, the overall model fit appears to be less than ideal, as shown by the SRMR and NFI values.

These findings suggest that while the model captures some important aspects of the learning environment, there may be issues with measurement and model specification that need to be addressed to improve the robustness and reliability of the results. Further refinement of the constructs and potentially expanding the model with additional or alternative variables could enhance its explanatory power and fit.

Discussion

Path Coefficient List A common rule of thumb suggests that for an independent variable to have a strong impact, its coefficient should exceed 0.1, and it can be considered significant if the value is ≥ 0.05 (Mohamed et al., 2018).

From the path coefficient list in Table 2:

The Knowledge Acquisition variable does not have a significant influence on the choice of learning model (coefficient < 0.05).

Satisfaction Level has a minor, yet somewhat significant influence.

The three remaining variables—Participant Information, Elements of Connectivism & Constructivism, and Student Engagement—all have a strong impact on the choice of learning model (coefficient ≥ 0.1).

R-Square Ozili (2022) posits that an R-square value between 0.50 and 0.99 is acceptable in social science research, especially when most explanatory variables are statistically significant. In Table 3, an R-square value of 0.571 indicates that 57.1% of the variance in the dependent variable (Learning Model) is explained by the independent variables. This suggests a moderate level of explanatory power, meaning that changes in the independent variables moderately influence the dependent variable in this model.

F-Square The f-square value measures the change in the R-square when an exogenous variable is excluded from the model. The rule of thumb is as follows: ≥ 0.02 indicates a small effect, ≥ 0.15 indicates a medium effect, and ≥ 0.35 indicates a large effect (Cohen, 1988). Table 4 shows: Elements of Connectivism & Constructivism have a large effect size (0.564), indicating a strong influence on the dependent variable (Learning Model); Participant Information has a medium effect size (0.180), suggesting it has a notable impact on the learning model; Student Engagement has a small effect size (0.042), indicating a weaker contribution; Knowledge Acquisition and Satisfaction Level have very small effect sizes (0.001 and 0.005, respectively), indicating minimal impact on the learning model.

Reliability and Validity In measuring reliability, Cronbach's Alpha is typically used to assess internal consistency within a group of dependent variables. According to Taber (2016), values between 0.8 and 0.9 indicate high reliability. A threshold of ≥ 0.7 is generally considered acceptable.

Student Engagement is the only variable with acceptable reliability (Cronbach's Alpha = 0.893).

The other variables fall below the acceptable threshold, indicating reliability issues.

Convergent Validity in PLS-SEM is assessed by Average Variance Extracted (AVE), with values of at least 0.5 indicating that the latent variable explains more than half of the variance among its indicators (Ghozali, 2016). In this model:

Knowledge Acquisition (AVE = 0.622), Participant Information (AVE = 0.513), and Student Engagement (AVE = 0.903) meet the acceptable validity threshold.

Elements of Connectivism & Constructivism and Learning Model do not meet the AVE threshold, indicating potential validity issues.

V. CONCLUSION

From the analysis, it can be concluded that the most influential variable on the learning model is Elements of Connectivism & Constructivism. Survey responses indicate that respondents who prefer online or blended learning models generally feel comfortable interacting online, frequently engage in online activities, and regularly use online resources.

Student Engagement also has a significant impact, with data showing that respondents are generally active in online learning activities.

Participant Information has a moderate impact on the learning model, suggesting that demographic factors like age and education level have some relevance but are not the primary determinants of learning model preference.

Satisfaction Level does not significantly influence the choice of learning model, as most respondents appear satisfied with their chosen learning model regardless of this factor.

This discussion highlights the importance of Connectivism and Constructivism in shaping effective learning models, particularly in online or blended learning environments. However, it also underscores the need for further refinement of the research model, particularly in addressing reliability and validity issues, to enhance the robustness of the findings.

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