

Comparative Analysis of Teaching and Learning Styles under a Hybrid Learning Modality among Selected BSAIS Students at Laguna University

Ellira Aissle Jan Ambal, Exequiel Adrada, Uel Bhlezy De Leon, Erica Joy Mercado, Bernice Jussel Martirez, Dr. Noraida Dimaculangan*

*elliraaisslejan@gmail.com *exequiel061602@gmail.com *deleon.bhlezy@gmail.com *mercadoerica75@gmail.com

*bernicejussel@gmail.com *noriedimaculangan1955@gmail.com

College of Business Administration and Accountancy, Laguna University, Santa Cruz, Laguna, Philippines

Abstract

Higher education is constantly changing, with institutions increasingly using hybrid learning methods to meet the needs of various students. Hybrid learning is an educational method that combines online and face-to-face teaching approaches. It provides flexibility and seeks to improve student engagement and learning results. This evolution requires a deeper understanding of the effectiveness of various teaching and learning styles within this hybrid system, especially in specific areas like accounting education. This research paper studies the effectiveness of different teaching and learning styles in a hybrid learning setting. It examines the different viewpoints of accounting students at Laguna University and investigates the impact of these modalities on their educational experience. It specifically aimed to answer the following: (a) students' perceived effectiveness of learning styles during hybrid learning modality, (b) students' perceived effectiveness of teaching styles effectiveness during hybrid learning modality, (c) significant difference between the learning and teaching styles during online and face-to-face learning modalities, and (d) significant relationship between the learning and teaching styles during online and face-to-face learning modalities. The study used a quantitative-comparative correlational method to compare the perception of BSAIS students about the effectiveness of teaching and learning styles between online and face-to-face modalities under a hybrid learning modality at Laguna University. The researchers tallied, tabulated, and evaluated the results accordingly based on the needed statistical treatment. The participants were one hundred and ninety-one (191) BSAIS students from Laguna University using a simple random sampling technique using Slovin's Formula. Data showed that respondents perceived read and write learning ($M=3.21$, $SD=0.802$) as the most effective learning style in face-to-face modality and auditory learning ($M=3.11$, $SD=0.823$) in online. Data also revealed that lecture-based approach is perceived as the most effective teaching style across modalities having the mean score of 3.29 in face-to-face and 3.18 in online, with the standard deviation of 0.745 and 0.753 respectively. It is also noteworthy that respondents perceived face-to-face modality as more effective than online across all teaching and learning style. The findings also underscore the complex relationship between teaching styles and students' learning preferences in hybrid education.

Hybrid Learning; Learning Styles; Teaching Styles; Accounting Education

1.1. Introduction

Multitudes of relevant learning modalities are applied in higher education today. Various researchers have continuously been seeking the most appropriate curricular delivery suitable to students' needs and capabilities. Although many universities still apply face-to-face learning, numerous have already gone to virtual delivery, and the most popular approach used in higher education today is blended learning (Rodrigo & Platon, 2021). Kazu and Yalçın (2022) define hybrid learning as combining traditional classroom teaching and the advantages of online platforms. With the continuous advancement of technology, this approach is becoming more popular, leading to an evaluation of recent empirical studies. The discussion on hybrid learning, as explained by Eyal and Gil (2022), highlights its complex and diverse features. It involves incorporating technology into educational environments and goes beyond traditional limits, focusing on promoting learner engagement. A study conducted by Essa (2023) found that hybrid learning has become widely recognized as an efficient method of teaching and learning in recent years. Based on the results obtained, the importance of hybrid learning cannot be overlooked. This indicates the need to increase awareness about the importance of creating a learning environment suitable for hybrid learning across various educational levels and fields.

Learning is a never-ending process, and a process is an event that leads to a specific outcome. Understanding will not be accomplished if challenges will cause the learning process to be delayed or stopped. Emma Lawrence (2024) said that learning styles represent the varied approaches that individuals use to absorb, process, and retain information. Recognizing and accommodating these differences can play a crucial role in effective teaching, fostering a more inclusive and engaging learning environment. A successful learning plan will resolve these challenges, resulting in learning that is personalized to the learner's needs.

Understanding learning styles is essential for developing effective teaching strategies. The field of education has undergone significant transformations driven by technological advancements and the impact of the COVID-19 pandemic. This evolution has led to reevaluating teaching approaches and methods, particularly in the transition from face-to-face (FTF) to online instruction and hybrid learning options (Hidayat & Helmanto, 2023). Cabual (2021) stresses the importance of addressing learners' diverse styles to improve effective teaching and learning outcomes. Failure for educators to match teaching approaches with the learners' style may hinder learning.

Successful teaching and student learning can be achieved by recognizing the learner's style and preferred learning modalities. Each student has his or her own learning style and preferences. Some people discover their dominant learning styles, while others use various learning styles in different circumstances. It contradicts Kolb's learning style theory which claims that people are born with a preference for a particular learning style. The study relied on Neil Fleming's VARK model of learning. This model emphasizes that students have different "preferred learning modes," or ways of processing information. The acronym VARK stands for Visual, Auditory, Reading/Writing Choice, and Kinesthetic learning styles" (Cabual, 2021).

Within the field of accounting education, there is a growing recognition of the need to adapt teaching methodologies to better engage and prepare students for the demands of the profession. As accounting practices evolve and become increasingly reliant on technology, educators must explore innovative approaches to teaching accounting principles and concepts effectively. Teaching and learning styles play a crucial role in determining the effectiveness of instruction and the extent to which students engage with

course material. Understanding educators' and learners' preferences and characteristics can inform the design of instructional strategies catering to diverse learning needs.

Conducting a comparative analysis of teaching and learning styles under the hybrid learning modality among BSAIS students at Laguna University serves several purposes. Firstly, it provides insights into the effectiveness of different instructional approaches within the context of BSAIS education. Secondly, it allows for the identification of best practices and areas for improvement in hybrid learning implementation. Lastly, it contributes to the existing body of knowledge on instructional strategies tailored to accounting education in a hybrid learning environment.

1.2. Theoretical background

Constructivism is utilized in this study. It is a learning theory that highlights the importance of active participation and interaction in the process of constructing knowledge. Hybrid learning involves students acquiring knowledge by engaging in a combination of online and in-person activities. Through the promotion of collaborative learning, critical thinking, and problem-solving skills, constructivism guides the development of hybrid courses that facilitate profound learning experiences. By incorporating constructivist principles into instructional methods, students feel encouraged to take responsibility for their learning and can apply their knowledge to real-life situations. This study also utilized the Technology Acceptance Model (TAM), a theoretical framework used to analyse the acceptance and use of technology by students in hybrid learning environments. The Technology Acceptance Model (TAM) identifies the main factors influencing students' attitudes toward online tools and platforms by analysing their perceived usefulness and ease of use. TAM offers helpful data on the way in which students are willing to participate in technology-mediated learning experiences in accounting education and the possible barriers that may hinder their adoption of such experiences. Understanding students' attitudes towards technology to guide the choice and integration of online tools for improving learning outcomes in hybrid courses.

1.3. Research question or Research hypothesis or Problem statement

It specifically aimed to answer the following: (a) students' perceived effectiveness of learning styles during hybrid learning modality, (b) students' perceived effectiveness of teaching styles effectiveness during hybrid learning modality, (c) significant difference between the learning and teaching styles during online and face-to-face learning modalities, and (d) significant relationship between the learning and teaching styles during online and face-to-face learning modalities at Laguna University.

1.4. Data and Methods

The study used a quantitative-comparative correlational method to compare the perception of BSAIS students about the effectiveness of teaching and learning styles between online and face-to-face modalities under a hybrid learning modality at Laguna University. The researchers tallied, tabulated, and evaluated the results accordingly based on the needed statistical treatment. The participants were one hundred and ninety-one (191) BSAIS students from Laguna University using a simple random sampling technique using Slovin's Formula.

1.5. Results

Table 1 shows the summary of mean results on the students' perceived effectiveness of learning styles in hybrid learning modality.

Table 1. Summary of mean results

	Face-to-face		Online	
	Mean	Interpretation	Mean	Interpretation
Visual Learning	3.16	Effective	3.08	Effective
Auditory Learning	3.19	Effective	3.11	Effective
Kinesthetic Learning	3.19	Effective	3.09	Effective
Read and Write Learning	3.21	Very Effective	3.09	Effective
OVERALL	3.19	Effective	3.09	Effective

The data revealed that visual learning obtained the lowest mean score among the categories in both modalities, still denoting its perceived effectiveness. It indicates that visual aids and resources are valued by students, even if they are not their primary preference. Kinesthetic learning follows closely with a mean score of 3.19 for face-to-face and 3.09 for online learning. Students appreciate hands-on activities and physical engagement in both settings, although they may find these experiences slightly more impactful in face-to-face environment. Next is auditory learning having a mean score of 3.19 for face-to-face and it obtained the highest mean score of 3.11 for online learning. This indicates auditory learners benefit from live discussions and lectures in person, they also find value in recorded lectures and audio resources when learning online. The online mean is slightly higher than kinesthetic but lower than visual learning in both modalities. Read and write learning obtained the highest mean score of 3.21 in face-to-face learning categorized as very effective. This means that the students prefer read and write learning in face-to-face and auditory learning in online setting. Since they benefit significantly from direct interaction with their teachers and learning tools in a traditional classroom environment. Overall, learning styles in face-to-face ($M=3.19$, $SD=0.800$) attained the highest mean compared to online ($M=3.09$, $SD=0.809$) with a remark of effective. It shows a noticeable advantage to face-to-face setting across all learning styles. It implies that students find it easier to engage with the lesson when they are physically present in their classroom. However, online setting still attained a high rating implying that it can be an effective alternative to traditional learning. According to Mather and Sarkans (2018), students exhibit differing perceptions regarding their performance, challenges, satisfaction, and achievement in online versus face-to-face (F2F) learning modalities. Students enrolled in online courses highlight flexibility, accessibility, and the convenience of balancing personal, professional, and academic responsibilities as key factors influencing their choice. Students who prefer F2F learning cite classroom interaction with peers, faculty, and course content as the primary reasons for their preference.

Table 2 shows the significant difference between the Learning Styles during Online and Face-to-Face Learning Modalities using t-test.

Table 2. Summary of t-test results

Modality	Mean	Standard Deviation	t	df	p	Interpretation
Face-to-face	3.19	0.469	3.437	190	< .001	Significant
Online	3.09	0.499				

Table 2 shows the results of significant difference between their learning style in face-to-face and online learning modalities. The results revealed that the mean score obtained in face-to-face learning modality ($M = 3.19$, $SD = 0.469$) was significantly higher compared to the mean score obtained in online learning modality ($M = 3.09$, $SD = 0.499$). The results imply that the students perceived face-to-face learning as more effective compared to online learning. In addition, the score of standard deviation of face-to-face is less than standard deviation of online. This means that the students' responses in face-to-face learning were more consistent and homogenous compared to online learning.

Based on the results, the t-value is 3.437 and the p-value is <0.001 at 190 degrees of freedom. Since the p-value is less than the 5% level of significance therefore there is a significant difference between their learning style in face-to-face and online learning modalities. It implies that students are engaged with and respond to these different learning environments in unique ways, with face-to-face learning providing them the advantages relative with interaction and engagement. Sun (2023) found out that there are differences between the two learning methods are significant in terms of the total score of the questionnaire, the factor of good teaching (GT), the factor of clear goals (CG) and the factor of appropriate assessment (AA). Additionally, students reported higher scores for face-to-face learning in these categories, indicating a preference for more interactive nature of in-person modality compared to online modality.

Table 3 shows the summary of mean results on the students' perceived effectiveness of teaching styles in hybrid learning modality.

Table 3. Summary of mean results

	Face-to-face		Online	
	Mean	Interpretation	Mean	Interpretation
Lecture-based Approach	3.29	Very Effective	3.18	Effective
Problem-based Approach	3.26	Very Effective	3.15	Effective
Collaborative Approach	3.27	Very Effective	3.15	Effective
OVERALL	3.27	Very Effective	3.16	Effective

Students' preferred hybrid learning teaching styles are shown in Table 3. In face-to-face and online settings, lecture-based approach had the highest means of 3.29 and 3.18. Students considered lecture-based teaching the most effective during hybrid learning, indicating they value direct instruction. The collaborative approach is also effective in person ($M = 3.27$, $SD = 0.734$), indicating that students prefer group work and interaction with classmates in person. Its mean score of 3.15 online suggests that collaborative activities are less engaging. The problem-based approach had the lowest mean scores of 3.26 face-to-face and 3.15 online.

Students' Perceived Effectiveness of Teaching Styles during face-to-face Learning Modality had a weighted mean of 3.27 and a standard deviation of 0.746 with a very effective remark, while online it had 3.16 and 0.758 with an effective remark. The results suggest that students find face-to-face teaching more effective than online. Cheung et al. (2023) conducted a randomized controlled experiment comparing face-to-face and synchronous online teaching. The findings showed no significant difference in student ratings regarding the effectiveness of the two teaching modes. However, the study noted that smaller class sizes in face-to-face settings were associated with significantly higher final exam scores. This indicates that students tend to gain more from direct interaction in smaller groups, which is typically more achievable in traditional classroom environments.

Table 4 shows the significant difference between the Teaching Styles during Online and Face-to-Face Learning Modalities using t-test.

Table 4. Summary of t-test results

Modality	Mean	Standard Deviation	t	df	p	Interpretation
Face-to-face	3.27	0.522	4.040	190	< .001	<i>Significant</i>
Online	3.16	0.417				

Table 4 unveils the results of significant difference between the teaching styles in face-to-face and online learning modalities. Results revealed that face-to-face mean score is higher than online indicating that students perceive face-to-face teaching as more satisfactory compared to online teaching. In terms of standard deviation, it shows that there is variability in students' responses for both face-to-face and online. The results revealed that the t-value is 4.040 and the p-value is <0.001 at 190 degrees of freedom. Since the p-value is less than the 5% level of significance therefore the null hypothesis was rejected indicating that there is a significant difference between teaching styles in face-to-face and online learning modalities. It highlights the importance of teaching style in both modalities, especially in their role shaping students' experiences and outcomes. The differences in the teaching styles signify that the students thrive better in interactive and engaging environments, which they typically encounter in face-to-face settings.

Anaga and Biney (2017) found out that even though each of the modes has their strengths and also complements each other, they, however, have weaknesses which can be worked on for maximum benefit in the teaching and learning process. There may not be important differences found between the two teaching and learning modes, and even if differences exist, they are likely due to the teacher's involvement and the institution's commitment in the programming of the learning process.

Table 5 shows the summary of regression results on the teaching and learning styles in hybrid learning modality.

Table 5. Summary of regression results

	Unstandersized	SE	B	t	p	Interpretation
Lecture-based Approach						
Intercept	3.149	0.034		92.878	< .001	
Visual Learning	-33.77	3.673×10^{-16}	-34.32	-4.947	< .001	Significant
Auditory Learning	-91.42	5.354×10^{-16}	-87.66	-0.139	< .001	Not Significant
Kinesthetic Learning	0.5	4.976×10^{-16}	0.494	$1.005 \times 10^{+15}$	< .001	Significant
Read and Write Learning	0.5	3.855×10^{-16}	0.532	$1.297 \times 10^{+15}$	< .001	Significant
Problem-based Approach						
Intercept	3.219	0.035		91.757	< .001	
Visual Learning	0.003	0.076	0.003	0.034	0.973	Not Significant
Auditory Learning	0.155	0.111	0.143	1.396	0.164	Not Significant
Kinesthetic Learning	0.021	0.103	0.02	0.199	0.842	Not Significant
Read and Write Learning	0.739	0.08	0.76	9.223	< .001	Significant
Collaborative Approach						
Intercept	3.238	0.037		87.393	< .001	
Visual Learning	0.163	0.123	0.159	1.327	0.186	Not Significant
Auditory Learning	0.051	0.18	0.044	0.282	0.778	Not Significant
Kinesthetic Learning	0.118	0.167	0.107	0.706	0.481	Not Significant
Read and Write Learning	0.488	0.129	0.475	3.773	< .001	Significant

Table 5 displays the result of analysis of Significant Correlation between Learning and Teaching Styles during Hybrid Learning Modality. This research is conducted to determine if the students' learning styles have significant correlation on the teaching styles. To test this hypothesis, multiple regression analysis was used. In the table, the unstandersized, estimated regression weights, standard errors, beta weights, and p-values for all predictors are given. Regression results indicated the four predictors explained 100% of the variance in lecture-based, 79.8% in problem-based and 52.9% in collaborative. It shows that in lecture-based approach, the intercept is statistically significant, and visual learning shows a strong negative correlation (coefficient = -33.17, $p < .001$), indicating that students who prefer visual methods perceive lectures as less effective. In distinction, kinesthetics and read and write learners show strong positive correlations with this approach (coefficients = 0.5, $p < .001$), denoting that they benefit from direct instruction. Auditory learning does not show a significant relationship, as reflected in its negligible coefficient (-91.42, $p = 0.89$). In the problem-based approach, the intercept is also significant but only read and write learning displays a meaningful positive correlation (coefficient = 0.739, $p < .001$). This means that students who favour reading and writing perceive problem-based learning as effective, likely due to its reliance on written materials and documentation. No significant relationships are observed for visual, auditory, or kinesthetics learners, with all p-values exceeding 0.05. Also, in the collaborative approach, the intercept is significant and read and write learning again exhibits a strong positive correlation (coefficient = 0.488, $p < .001$). This means that students with a preference for reading and writing thrive in collaborative settings involving structured written activities. However, visual, auditory, and kinesthetics learning styles show no significant correlations, with all

respective p-values above 0.05. The findings underscore the complex relationship between teaching styles and students' learning preferences in hybrid education. Visual learners face challenges with the lecture-based approach, indicating a need for more visual aids and interactive elements to enhance their engagement. In contrast, kinesthetic and read/write learners find this traditional method beneficial. For problem-based and collaborative approaches, read and write learners consistently express positive perceptions, emphasizing the value of written materials and structured activities in these formats. However, evidence of significant engagement among visual, auditory, or kinesthetic learners is limited, suggesting these methods may require further adjustments to better address diverse learning preferences.

1.6. Conclusions

The following conclusions are drawn based on the study's various findings to address the problem's stated requirements.

- Students strongly prefer face-to-face learning modality across all learning styles because of their interactive and structured environment, which enhances engagement and comprehension compared to online modality.
- Students perceived teaching styles during hybrid learning modality as very effective in face-to-face settings and only effective in online modality. This suggests that direct engagement and immediate feedback present in face-to-face settings is important in enhancing learning outcomes across various teaching styles.
- There was a significant difference between the learning and teaching styles during online and face-to-face learning modalities signifying that the students thrive better in interactive and engaging environments, which they typically encounter in face-to-face settings.
- The correlation analysis reveals varying degrees of alignment between learning and teaching styles. Lecture-based approach is effective for kinesthetic and read/write learners, but they are incompatible with visual learners, as evidenced by a strong negative correlation (-33.17 , $p < .001$). Problem-based approach is highly compatible with read/write learners (coefficient = 0.739 , $p < .001$), yet do not effectively engage visual, auditory, and kinesthetic learners. Collaborative approach favor read/write learners (coefficient = 0.488 , $p < .001$), whereas visual, auditory, and kinesthetic learners demonstrate limited engagement, stressing the necessity for more inclusive strategies.

References

- Ananga, P., & Biney, I. K. (2017). COMPARING FACE-TO-FACE AND ONLINE TEACHING AND LEARNING IN HIGHER EDUCATION. *MIER Journal of Educational Studies Trends and Practices*, 7(2), 165–179. <https://doi.org/10.52634/mier/2017/v7/i2/1415>
- Cabual, R. A. (2021). Learning Styles and Preferred Learning Modalities in the New Normal. *OALib*, 08(04), 1–14. <https://doi.org/10.4236/oalib.1107305>
- Cheung, Y. Y. H., Lam, K. F., Zhang, H., Kwan, C. W., Wat, K. P., Zhang, Z., Zhu, K., Chung, Y. K., & Yin, G. (2023). A randomized controlled experiment for comparing face-to-face and online teaching during COVID-19 pandemic. *Frontiers in Education*, 8. <https://doi.org/10.3389/educ.2023.1160430>
- Emma, Lawrence. (2024). The Role of Learning Styles in Effective Teaching and Learning.
- Essa, E. K. (2023). The Effectiveness of Hybrid Learning in Enhancing Academic Mindfulness and Deeper Learning of University Students. *International Journal of Research in Education and Science*, 9(1), 188–202. <https://doi.org/10.46328/ijres.3081>
- Eyal, L., & Gil, E. (2022). Hybrid Learning Spaces — A Three-Fold Evolving Perspective. In *Understanding teaching-learning practice* (pp. 11–23). https://doi.org/10.1007/978-3-030-88520-5_2

- Hidayat, A., & Helmanto, F. (2023). Translation Teaching Model in Offline, Online, and Hybrid Mode. JET (Journal of English Teaching), 9(1), 44–56. <https://doi.org/10.33541/jet.v9i1.4448>
- Kazu, İ. Y., & Yalçın, C. K. (2022). Investigation of the Effectiveness of Hybrid Learning on Academic Achievement: A Meta-Analysis Study. International Journal of Progressive Education, 18(1), 249–265. <https://doi.org/10.29329/ijpe.2022.426.14>
- Mather, M., & Sarkans, A. (2018). Student perceptions of online and face-to-face learning. International Journal of Curriculum and Instruction, 10(2), 61-76.
- Rodrigo, R., & Platon, L. (2022). Hybrid learning for the digital natives: Impacts on academic performance and learning approaches. Kasetsart Journal of Social Sciences, 43(1). <https://doi.org/10.34044/j.kjss.2022.43.1>.
- Sun, R. (2023). Comparative study of online learning and face-to-face learning. SHS Web Of Conferences, 180, 04006. <https://doi.org/10.1051/shsconf/202318004006>