

Teachers in the Virtual Classroom: Attitudes and Behavior toward Collaborative Online Learning

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DOI: <https://doi.org/10.51244/IJRSI.2026.1307000060>

Received: 04 July 2026; Accepted: 10 July 2026; Published: 27 July 2026

ABSTRACT

The increasing integration of digital technologies in education has reshaped instructional practices, with Collaborative Online Learning (COL) emerging as an important strategy to enhance engagement, interaction, and learning outcomes in higher education. This study examined the attitudes and behaviors of College of Teacher Education Arts and Sciences teachers toward COL and determined whether significant relationships exist between these variables and selected demographic profiles. A descriptive-comparative-correlational survey design was utilized, involving 22 faculty members who responded to a structured questionnaire assessing demographic characteristics, attitudes, and behavioral engagement toward COL.

Results revealed that respondents demonstrated a generally negative attitude toward COL, despite exhibiting a moderate level of behavioral engagement in related practices. This suggests that while teachers may still engage in COL activities due to institutional or instructional requirements, their perceptions remain less favorable. Further analysis showed no significant relationship between attitude and behavior ($p > 0.05$), indicating that behavioral engagement does not necessarily reflect positive attitudes. Likewise, demographic variables such as age, gender, and educational attainment did not significantly influence either attitude or behavior, suggesting a relatively uniform response pattern across groups.

The study concludes that there is a persistent gap between teachers' perceptions and their actual engagement in COL practices. To address this, the proposed COLLAB-TEACH Program is recommended to strengthen teachers' digital competence, confidence, and pedagogical readiness in implementing collaborative online learning strategies. The findings highlight the need for sustained institutional support, targeted professional development, and policy interventions to improve the effective and meaningful integration of COL in higher education.

Keywords: Collaborative Online Learning, Digital Education, Instructional Technology, Teacher Attitudes, Teaching Behavior

INTRODUCTION

The rapid integration of digital technologies in education, particularly after the global disruption caused by the COVID-19 pandemic, has significantly transformed teaching and learning processes worldwide. One of the most prominent shifts is the adoption of collaborative online learning (COL), which emphasizes interaction, knowledge sharing, and collective problem-solving in virtual environments. Online collaborative platforms have become essential in ensuring continuity of education while promoting active engagement among learners and educators (UNESCO, 2021). In higher education, particularly among College of Teacher Education Arts and Sciences teachers, the adoption of collaborative online learning (COL) is crucial as these educators shape future teachers' pedagogical practices. However, the effectiveness of collaborative online learning (COL) largely

depends on teachers' attitudes and behaviors, which influence their willingness to adopt and sustain such innovations (Trust & Whalen, 2020).

Attitude plays a critical role in determining teachers' acceptance of collaborative online learning environments. Studies indicate that positive attitudes toward technology integration are associated with increased motivation, adaptability, and openness to innovative teaching strategies (Scherer et al., 2021). Conversely, negative attitudes may stem from technological anxiety, lack of training, or perceived inefficiency of online collaboration tools. Behavior, on the other hand, reflects the actual implementation of collaborative online learning (COL) practices, including the use of digital tools, facilitation of interaction, and engagement in virtual teamwork. Research by Martin et al. (2022) found that while many teachers express favorable attitudes toward online collaboration, their actual practices may lag due to infrastructural and institutional constraints. This discrepancy highlights the importance of examining both attitude and behavior simultaneously.

Furthermore, demographic factors such as age, gender, educational qualifications, civil status, length of service, and familiarity with digital tools significantly influence teachers' attitudes and behaviors toward collaborative online learning. For instance, younger educators and those with higher digital literacy tend to demonstrate more positive attitudes and proactive behaviors in online teaching environments (König et al., 2020). In contrast, more experienced teachers may exhibit resistance due to deeply rooted traditional pedagogical practices. A study by OECD (2021) emphasized that disparities in access to technology and professional development opportunities contribute to uneven adoption of digital teaching practices across educational institutions. Therefore, understanding the relationship between demographic profiles and collaborative online learning (COL) engagement is essential for designing targeted interventions.

This study is anchored on the global framework of Sustainable Development Goal 4 (Quality Education), which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Collaborative online learning directly supports SDG 4 by enhancing access to education, fostering inclusive participation, and developing 21st-century skills such as communication, collaboration, and digital literacy. The relevance of this study to SDG 4 lies in its focus on improving teaching practices through technology integration, thereby contributing to the quality and inclusivity of education systems. Moreover, understanding teachers' readiness for collaborative online learning (COL) helps bridge gaps in digital pedagogy, which is a critical component of achieving sustainable educational development.

From a socio-economic perspective, the adoption of collaborative online learning addresses pressing challenges such as educational inequality, digital divide, and limited access to quality instruction in underserved communities. In developing countries like the Philippines, disparities in technological resources and internet connectivity continue to hinder effective online learning implementation (World Bank, 2022). Teachers in public and rural institutions often face constraints that affect both their attitudes and behaviors toward digital collaboration. By examining these factors, this study contributes to addressing socio-economic barriers by identifying areas for capacity building, resource allocation, and policy improvement. Strengthening teachers' competencies in collaborative online learning (COL) can ultimately lead to improved student outcomes and more equitable educational opportunities.

This study seeks to assess the attitude and behavior of College of Teacher Education Arts and Sciences teachers toward collaborative online learning and examine the influence of demographic variables on these factors. It also aims to determine the relationship between attitude and behavior, as well as identify significant differences across demographic groups. The findings will serve as a basis for proposing a Collaborative Online Learning Plan program tailored to the needs of educators. By aligning with SDG 4 and addressing socio-economic challenges, this research provides valuable insights into enhancing digital teaching practices and promoting sustainable, inclusive, and high-quality education in the modern era.

Statement of the Problem/Research Questions

The primary objective of this study is to assess the attitude and behavior of College of Teacher Education Arts and Sciences Teachers towards Collaborative Online Learning and examine the relationship between their demographic profile and these variables.

Specifically, the study aims to address the following questions:

1. What is the demographic profile of the College of Teacher Education Arts and Sciences Teachers in terms of:
 - 1.1. Gender
 - 1.2. Age
 - 1.3. Educational Qualifications
 - 1.4. Civil Status
 - 1.5. Length of service
 - 1.6 Digital Tools
2. What is the attitude level of College of Teacher Education Arts and Sciences Teachers on Collaborative Online Learning?
3. What is the behavior level of College of Teacher Education Arts and Sciences Teachers on Collaborative Online Learning?
4. Is there a significant relationship between the College of Teacher Education Arts and Sciences Teachers' level of attitude and their behavior toward Collaborative Online Learning?
5. Is there a significant difference in the level of attitude of College of Teacher Education Arts and Sciences Teachers regarding Collaborative Online Learning when grouped according to their demographic profile?
6. Is there a significant difference in the level of behavior of College of Teacher Education Arts and Sciences Teachers regarding Collaborative Online Learning when grouped according to their demographic profile?
7. Based on the findings of the study, what Collaborative Online Learning Plan can be proposed?

Hypothesis

Ho1: There is no significant relationship between the level of attitude and the behavior toward Collaborative Online Learning among College of Teacher Education Arts and Sciences Teachers.

Ho2: There is no significant difference in the level of attitude regarding Collaborative Online Learning among College of Teacher Education Arts and Sciences Teachers. when grouped according to their demographic profile.

Ho3: There is no significant difference in the behavior toward Collaborative Online Learning among College of Teacher Education Arts and Sciences Teachers. when grouped according to their demographic profile.

REVIEW OF RELATED LITERATURE

Collaborative online learning (COL) has become a central approach in higher education, particularly with the rapid digital transformation of teaching and research practices. According to Hodges et al. (2020), the shift to online learning environments highlighted the importance of structured collaboration among educators and learners, emphasizing that teachers' attitudes toward online collaboration significantly influence their effectiveness in implementing such approaches. The study found that positive attitudes toward digital collaboration tools enhance engagement and participation, which is relevant to the present study's focus on teachers' attitudes toward collaborative online learning.

In examining teacher attitudes and readiness, Trust and Whalen (2020) reported that educators' willingness to

adopt collaborative online learning depends largely on their confidence in using digital tools and their prior experiences with technology. Their findings suggest that demographic variables such as age, teaching experience, and educational background play a crucial role in shaping attitudes, supporting the inclusion of demographic profile variables in the present study.

Furthermore, König et al. (2020) investigated teachers' adaptation to online teaching during the global shift to remote learning and found that those with higher digital competence demonstrated more positive attitudes and more effective collaborative behaviors. This implies that access to and familiarity with digital tools identified as a variable in the current study are critical in determining both attitude and behavior toward collaborative online learning.

The relationship between attitude and behavior in online learning environments has also been widely explored. Cheng and Xie (2021) found a significant positive correlation between teachers' attitudes toward online collaboration and their actual implementation of collaborative strategies. Their study supports the assumption that favorable attitudes often lead to more active and meaningful engagement in collaborative online practices, directly aligning with the present study's investigation of the relationship between attitude and behavior.

In a more recent study, Martin et al. (2022) emphasized that effective collaborative online learning requires not only positive attitudes but also consistent behavioral practices such as communication, participation, and the use of digital collaboration platforms. Their findings indicate that teachers' behaviors are influenced by both individual motivation and institutional support, reinforcing the importance of examining behavioral levels alongside attitudes.

Additionally, Bond et al. (2023) explored student and teacher engagement in online collaborative environments and found that demographic factors such as teaching experience and professional training significantly affect engagement levels. The study revealed that educators with more experience or professional development in digital pedagogy exhibit higher levels of collaborative behavior, supporting the present study's focus on differences based on demographic variables.

Finally, OECD (2024) highlighted the growing importance of collaborative online learning in fostering innovation and 21st-century skills in education. The report emphasized that teachers' attitudes and behaviors toward collaboration in digital environments are essential for successful implementation and sustainability of online learning initiatives. It also recommended the development of structured programs to enhance teachers' competencies in collaborative online learning, which aligns with the current study's objective of proposing a Collaborative Online Learning Plan program.

Overall, the reviewed literature indicates that teachers' attitudes and behaviors toward collaborative online learning are interrelated and significantly influenced by demographic characteristics and access to digital tools. Positive attitudes are often associated with higher levels of engagement and effective collaborative practices, while differences in demographic profiles contribute to variations in both attitude and behavior. These findings provide a strong theoretical and empirical foundation for examining the variables outlined in the present study and for developing an appropriate intervention program based on the results.

Theoretical Framework

This study is anchored on the **Theory of Planned Behavior (TPB)** developed by Icek Ajzen 1985, which explains that human behavior is determined by behavioral intention, and this intention is influenced by attitude toward the behavior, subjective norms, and perceived behavioral control. In the context of Collaborative Online Learning (COL), this theory provides a strong foundation for understanding how teachers' cognitive evaluations, social influences, and perceived capabilities shape their actual engagement in digital teaching practices. The TPB is widely applied in educational technology research because it effectively explains the gap between attitude and actual behavioral performance in online and blended learning environments (Ajzen, 1991; Ajzen, 2020).

Recent studies consistently support the relevance of TPB in predicting teachers' and students' engagement in

online learning environments. For instance, Teo et al. (2021) found that attitude, subjective norms, and perceived behavioral control significantly predict teachers' intention to use technology in blended learning environments, emphasizing that positive attitudes lead to stronger behavioral intentions. Similarly, Bokolo (2021) demonstrated that academic staff's behavioral intention to adopt blended learning is strongly influenced by perceived usefulness and facilitating conditions, which align with TPB's perceived behavioral control construct.

In addition, Chou and Chou (2021) reported that teachers' continuance intention toward online teaching is significantly influenced by their attitudes toward effectiveness, flexibility, and institutional support, confirming that attitude is a central determinant of behavior in online teaching contexts. Likewise, Maheshwari (2021) found that perceived satisfaction and institutional support significantly enhance students' intention to engage in online learning, highlighting the role of environmental and attitudinal factors in shaping behavioral intention.

Further supporting TPB, Nie et al. (2020) emphasized that attitude and perceived behavioral control significantly predict behavioral intention in mobile learning environments, while subjective norms influence motivation through social pressure from colleagues and institutions. Similarly, Lung-Guang (2020) confirmed that self-regulated learning and behavioral attitudes significantly influence participation in massive open online courses (MOOCs), reinforcing TPB's predictive validity in digital education.

Moreover, Hamiza et al. (2020) found that students' adoption of e-learning platforms is strongly determined by attitude and perceived behavioral control, suggesting that ease of use and confidence in technology use are critical in shaping engagement. In a related study, Hung and Jeng (2020) revealed that perceived control and attitude significantly influence educators' willingness to participate in online teaching communities, which aligns with your study's focus on collaborative online learning behavior.

Similarly, Cheng et al. (2022) emphasized that teachers' digital competence and perceived institutional support significantly affect their behavioral intention to use online learning systems, strengthening the TPB assumption that external and internal factors jointly shape behavior. In another study, Khan et al. (2022) highlighted that cultural and contextual differences influence subjective norms and attitudes toward online learning adoption, suggesting that demographic variables play an indirect but important role in behavioral intention formation.

More recently, Songkram and Chootongchai (2022) confirmed that perceived usefulness, system quality, and subjective norms significantly predict teachers' continuous intention to use educational technologies, reinforcing the integrated relationship between attitude and behavior in TPB-based models. Lastly, Pratama (2021) found that social influence and perceived ease of use significantly affect teachers' acceptance of mobile learning systems, further validating the role of TPB constructs in explaining educational technology adoption behavior.

Collectively, these studies affirm that TPB is a robust theoretical framework for explaining teachers' attitudes and behaviors toward collaborative online learning. Across different educational contexts, attitude consistently emerges as the strongest predictor of behavioral intention, while perceived behavioral control influences both intention and actual use of technology. Subjective norms also play a significant role, particularly in institutional or culturally influenced environments. Furthermore, demographic variables such as age, experience, and digital competence indirectly shape these TPB constructs, thereby influencing behavioral outcomes.

In relation to this study, the TPB effectively explains how College of Teacher Education Arts and Sciences teachers form attitudes toward collaborative online learning, how these attitudes translate into actual behavior, and how demographic characteristics may influence these relationships. This theoretical grounding supports the development of a Collaborative Online Learning Plan, ensuring that interventions target not only behavioral outcomes but also underlying psychological and contextual determinants, in alignment with SDG 4 (Quality Education).

Conceptual Framework

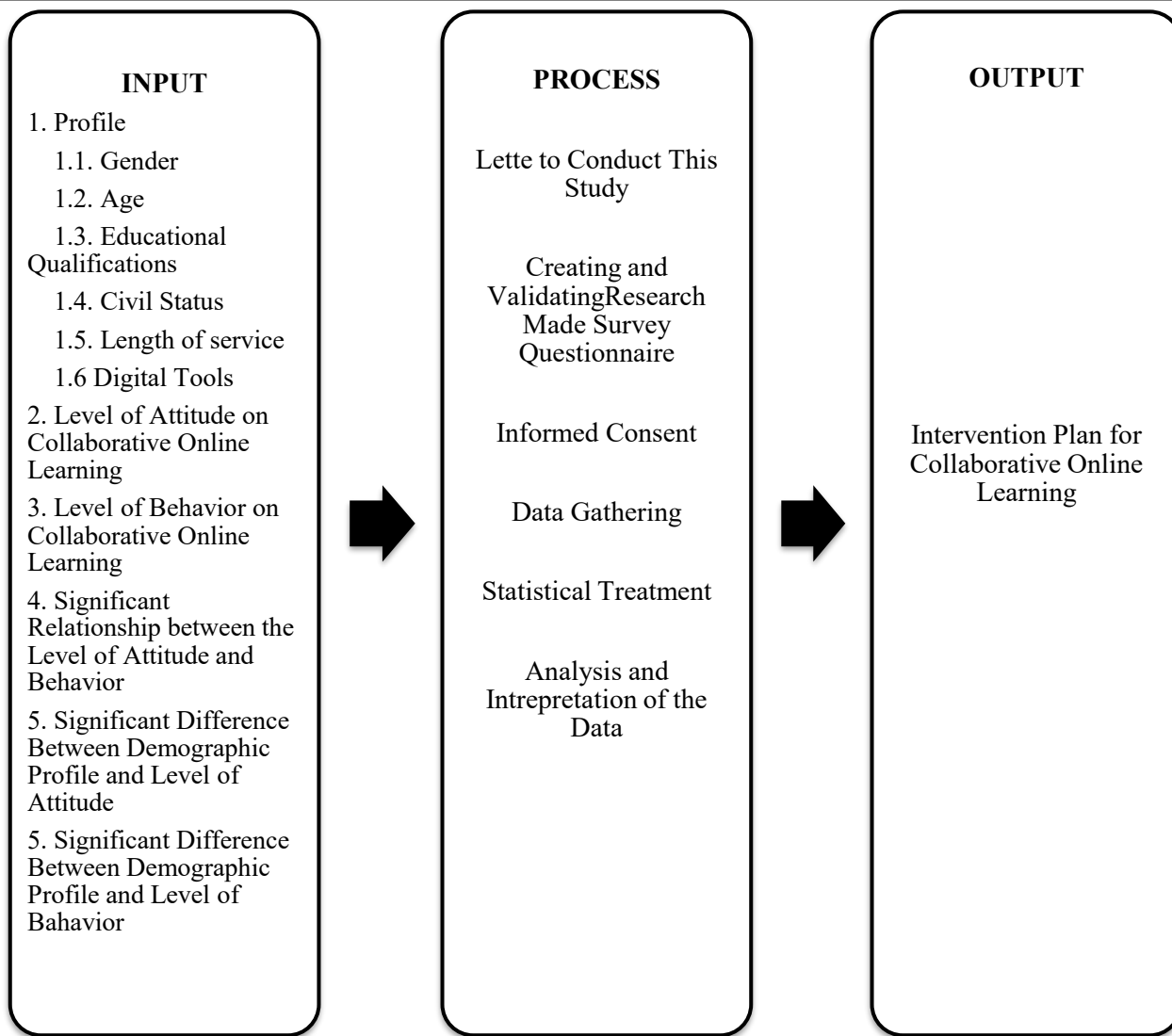


Figure 1: *Conceptual Paradigm*

The conceptual framework of this study is anchored on the Input–Process–Output (IPO) model, which systematically illustrates how the variables are organized and how they interact to produce the desired outcome. The input component consists of the teachers’ demographic profile specifically gender, age, educational qualifications, civil status, length of service, and use of digital tools as well as their level of attitude and level of behavior toward Collaborative Online Learning (COL). These variables are considered essential determinants because demographic characteristics often influence educators’ openness, adaptability, and engagement with technology-enhanced pedagogies. Attitude refers to the teachers’ perceptions, beliefs, and disposition toward COL, while behavior reflects their actual practices and participation in collaborative online environments. Additionally, the framework examines the significant relationship between attitude and behavior, as well as the differences in these variables when grouped according to demographic profile, thereby providing a multidimensional understanding of how personal and professional factors shape engagement in COL.

The process component outlines the methodological procedures undertaken to transform inputs into meaningful findings. This includes securing permission to conduct the study, developing and validating a research-based survey questionnaire, obtaining informed consent from participants, and conducting systematic data gathering. The collected data are then subjected to appropriate statistical treatment to determine levels, relationships, and differences among variables. This is followed by a thorough analysis and interpretation of results, ensuring that the findings are grounded in empirical evidence and aligned with the research objectives. Each step in the process ensures rigor, validity, and reliability, which are crucial in producing credible conclusions about teachers’ attitudes and behaviors in COL contexts.

Finally, the output of the study is the development of an intervention plan for Collaborative Online Learning. This output is directly informed by the results of the analysis, particularly the identified strengths, gaps, and needs of the teachers. The intervention plan aims to enhance both attitude and behavior by proposing targeted strategies, training programs, or policy recommendations that support effective implementation of COL. Overall, the conceptual framework demonstrates a logical flow from identifying influencing factors (input), applying systematic research procedures (process), and generating actionable solutions (output), thereby contributing to the improvement of teaching practices in collaborative online learning environments.

Significance of the Study

This study holds substantial significance in the field of teacher education, particularly in the evolving landscape of digital and collaborative pedagogies. By examining the attitudes and behaviors of College of Teacher Education Arts and Sciences teachers toward Collaborative Online Learning (COL), the research contributes to a deeper understanding of how educators engage with and adapt to technology-mediated instructional practices. In an era where digital transformation is reshaping education, identifying the factors that influence teachers' readiness and responsiveness to collaborative online environments is both timely and essential.

For Educators. The findings of this study provide valuable insights into their own perceptions and practices regarding Collaborative Online Learning (COL). By recognizing how demographic variables such as age, gender, educational qualifications, length of service, and familiarity with digital tools influence their attitudes and behaviors, teachers can become more reflective practitioners. This awareness can encourage professional growth, foster openness to innovation, and enhance their capacity to implement effective collaborative strategies in online and blended learning environments.

For Educational Institutions and Administrators. This research offers an empirical basis for designing targeted faculty development programs. Understanding the variations in attitude and behavior across demographic groups allows institutions to create inclusive, responsive, and differentiated training initiatives. The proposed Collaborative Online Learning Plan program, grounded in the study's findings, can serve as a strategic framework to strengthen digital competencies, improve instructional delivery, and support faculty in navigating the challenges of online collaboration.

For Curriculum Developers and Policymakers. The study provides evidence-based insights that can inform the integration of collaborative online learning approaches into teacher education curricula. It highlights the importance of aligning instructional design with teachers' needs and capabilities, thereby ensuring that educational reforms are both practical and sustainable. Moreover, the findings can guide policy decisions related to digital infrastructure, teacher training, and the promotion of innovative teaching methodologies.

For Future Researchers. This study serves as a relevant reference point for further investigations into technology integration, teacher behavior, and online learning environments. It opens opportunities for comparative studies, longitudinal research, and the exploration of additional variables that may influence collaborative learning practices.

RESEARCH METHODOLOGY

This chapter presents the method used in this study. Specifically, the following are included: research design, research environment, respondents, research instrument, ethical consideration, the data gathering procedures and statistical treatment.

Research Design

This study employed a **Descriptive-Comparative-Correlational Survey Design** to examine the attitude and behavior of College of Teacher Education, Arts and Sciences teachers toward Collaborative Online Learning (COL), as well as the influence of demographic variables on these factors.

The descriptive design was used to systematically describe the respondents' demographic profile and their levels

of attitude and behavior toward Collaborative Online Learning. The comparative design was utilized to determine whether significant differences exist in attitude and behavior when respondents are grouped according to their demographic characteristics. Meanwhile, the correlational design was employed to determine the relationship between attitude and behavior toward Collaborative Online Learning.

This design is appropriate for the study because it allows the researchers to collect quantitative data, describe existing conditions, compare group differences, and determine relationships among variables without manipulating any conditions.

Research Environment

The study was conducted at the **University of Southern Philippines Foundation (USPF)**, located at Salinas Drive, Lahug, Cebu City. USPF is one of the few higher education institutions in Region VII (Central Visayas) recognized for its Level III accreditation, reflecting its strong commitment to academic excellence, research, and quality assurance.

The study specifically focused on the **College of Teacher Education, Arts and Sciences**, which is actively engaged in academic innovation and instructional development. The institution was selected as the research locale because it provides a relevant environment for examining the integration of Collaborative Online Learning in higher education teaching practices.

Research Participants

The respondents of this study were twenty-two (22) faculty members from the College of Teacher Education, Arts and Sciences of University of Southern Philippines Foundation. This group was purposefully selected to ensure that the participants possess relevant academic and instructional experience aligned with the objectives of the study. The limited but focused number of respondents is appropriate for a small-scale descriptive-comparative and correlational investigation, allowing for a more targeted examination of the variables under study within a specific academic context.

The selection of participants was guided by a set of inclusion criteria to ensure that only qualified and relevant respondents were included in the study. Specifically, participants must be either regular or part-time faculty members of the College of Teacher Education, Arts and Sciences at USPF, ensuring that they are directly involved in the instructional operations of the institution. They must also be actively teaching during the conduct of the study to guarantee that their responses reflect current teaching experiences and practices. In addition, participants were required to have experience in online or blended learning environments, as such exposure is essential in understanding modern instructional approaches that integrate technology-mediated learning.

Furthermore, respondents must have prior exposure or familiarity with digital tools used in teaching and learning, as this ensures that they can provide informed responses regarding technology-enhanced educational practices. Lastly, participation in the study was voluntary, ensuring ethical compliance and respect for the autonomy of the respondents. This voluntary participation also helps promote honesty and authenticity in the responses provided. Overall, these inclusion criteria were established to ensure that the data collected are both relevant and grounded in the actual experiences of educators engaged in contemporary teaching modalities.

Research Sampling

This study utilized **purposive sampling**, a non-probability sampling technique in which respondents are intentionally selected based on specific characteristics relevant to the research objectives.

Purposive sampling was appropriate because the study required respondents who have direct experience and engagement with Collaborative Online Learning and digital teaching tools. Since not all faculty members may have sufficient exposure to online learning practices, purposive sampling ensured that the selected participants could provide relevant, informed, and meaningful responses aligned with the objectives of the study.

Research Instrument

The primary data-gathering instrument used in this study was a structured survey questionnaire developed by the researchers to ensure alignment with the objectives of the investigation. The questionnaire was carefully designed and divided into three distinct parts to comprehensively capture the necessary data. Part I focused on the demographic profile of the respondents, which included gender, age, educational qualifications, civil status, length of service, and the digital tools they commonly use. This section was intended to provide a detailed background of the participants, allowing for meaningful analysis of how demographic factors may relate to their attitudes and behaviors.

Part II of the questionnaire assessed the respondents' attitude toward Collaborative Online Learning, focusing on their perceptions, beliefs, and level of acceptance regarding its use in instructional and academic contexts. Meanwhile, Part III examined their behavior toward Collaborative Online Learning, particularly their actual practices, engagement, and frequency of use in teaching and learning activities. By separating attitude and behavior into distinct sections, the instrument enabled a clearer analysis of the relationship between what educators believe and how they act in relation to collaborative online learning.

To measure the responses in Parts II and III, a four-point Likert scale without a neutral option was employed. This scale was intentionally designed to encourage decisive responses and minimize ambiguity or central tendency bias. The scale was interpreted as follows: 4 – Strongly Agree, 3 – Agree, 2 – Disagree, and 1 – Strongly Disagree. The absence of a neutral choice required respondents to express a clear position, thereby improving the discriminative power of the data and enhancing the interpretability of the results. Overall, the structured design of the questionnaire ensured consistency in data collection and supported a rigorous quantitative analysis of the study variables.

Data Gathering Procedures

The data-gathering procedure of the study was carried out through a series of systematic and sequential steps to ensure ethical compliance, validity, and accuracy of the collected information. Initially, a formal request was submitted to the administration of the University of Southern Philippines Foundation seeking approval to conduct the study within the institution. This step ensured that the research adhered to institutional protocols and obtained the necessary clearance prior to data collection.

Following approval, the research instrument underwent validation by subject matter experts to ensure its content relevance, clarity, and alignment with the study's objectives. After the validation process, a pilot test was conducted to determine the reliability of the instrument, allowing the researcher to assess the internal consistency of the questionnaire items and make necessary refinements where needed. Once the instrument was deemed valid and reliable, the questionnaires were distributed to the selected respondents who met the inclusion criteria of the study.

After an allotted response period, the completed questionnaires were retrieved to ensure completeness and maximize response rate. Finally, the gathered data were systematically encoded, organized, and prepared for statistical analysis. This process involved careful data entry and verification to ensure accuracy and consistency, thereby strengthening the integrity of the dataset and supporting reliable interpretation of the study's findings.

Validity and Reliability

To ensure the validity of the instrument, it underwent content validation by experts in educational research and instructional technology. The experts evaluated the clarity, relevance, and appropriateness of each item, and revisions were made based on their recommendations.

To establish reliability, a pilot test was conducted among respondents with similar characteristics but not included in the actual study. The internal consistency of the questionnaire was measured using Cronbach's Alpha, with a minimum acceptable value of 0.70, indicating that the instrument is reliable for data collection.

Data Analysis

The data collected in this study were analyzed using quantitative statistical techniques to answer the research questions effectively.

Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the demographic profile and describe the levels of attitude and behavior of respondents. The mean was used to determine the central tendency of responses, while the standard deviation measured the variability and consistency of responses.

Inferential statistics were also employed to test the hypotheses of the study. Specifically, Pearson's Product-Moment Correlation Coefficient (Pearson's r) was used to determine the relationship between attitude and behavior toward Collaborative Online Learning.

To determine significant differences in attitude and behavior when respondents are grouped according to demographic variables, the Kruskal-Wallis H Test was utilized. This non-parametric test was appropriate due to the small sample size ($n = 22$) and the ordinal nature of Likert-scale data.

All statistical tests were interpreted at a 0.05 level of significance, where a p-value less than 0.05 indicates rejection of the null hypothesis.

Ethical Considerations

Ethical standards were strictly observed throughout the conduct of the study. Permission to conduct the research was obtained from the administration of USPF prior to data collection.

Participants were fully informed about the purpose of the study, and their participation was entirely voluntary. They were assured that their responses would be kept confidential and used solely for academic purposes. Anonymity was maintained by ensuring that no identifying information was included in the data analysis or reporting.

Participants were also informed of their right to withdraw from the study at any time without penalty or negative consequences.

Statistical Treatment of Data

The following statistical tools were used to analyze the data:

Frequency and Percentage. Used to describe the demographic profile of the respondents.

Mean and Standard Deviation. Used to determine the level of attitude and behavior toward Collaborative Online Learning.

Pearson's r (Product-Moment Correlation Coefficient). Used to determine the significant relationship between teachers' attitude and behavior.

Kruskal-Wallis Test. Used to determine significant differences in attitude and behavior when respondents are grouped according to their demographic profile. This non-parametric test was appropriate due to the small sample size and ordinal nature of the data.

RESULTS AND DISCUSSION

This chapter presents a thorough study and interpretation of the data gathered to determine the attitude and behavior of College of Teacher Education Arts and Sciences Teachers towards Collaborative Online Learning and examine the relationship between their demographic profile and these variables.

Table 1 Demographic Profile in Terms of Gender

Gender	Frequency	Percentage
Male	8	36.36%
Female	14	63.64%
Total	22	100.00%

The data presented in Table 1 show the demographic distribution of respondents in terms of gender. Out of the total 22 respondents, 14 or 63.64% are female, while 8 or 36.36% are male, indicating that most participants are female. This suggests a gender imbalance in the sample, with female respondents being more prominently represented than their male counterparts.

This pattern is consistent with trends observed in higher education, particularly in teacher education and arts and sciences programs, where female participation tends to be higher. It indicates that women continue to dominate enrollment in education-related fields, reflecting broader global patterns in academic specialization and professional pathways (UNESCO, 2022). This may explain the higher proportion of female respondents in the present study.

From a research perspective, the predominance of female respondents may influence the overall findings, as gender can shape perspectives, attitudes, and behaviors in certain contexts. However, recent literature suggests that gender differences in academic engagement and technology use have become less pronounced, especially in environments where access to resources and opportunities is relatively equal (OECD, 2023). This implies that while the sample is female dominated, the impact on the study's overall conclusions may be minimal.

Additionally, studies have shown that female respondents are often more willing to participate in survey-based research, particularly in academic settings, which may contribute to their higher representation in the sample (Porter & Whitcomb, 2021). This tendency can influence the composition of respondents but does not necessarily undermine the validity of the data.

In summary, Table 1 reveals that the respondent group is predominantly female, reflecting common enrollment and participation trends in education-related fields. While this gender distribution should be considered when interpreting the results, it also aligns with existing literature and does not necessarily limit the reliability of the study's findings.

Table 2 Demographic Profile in Terms of Age

Age	Frequency	Percentage
20-29 years old	7	31.82%
30-39 years old	7	31.82%
40-49 years old	3	13.64%
50-59 years old	2	9.08%
60 years old and above	3	13.64%
Total	22	100.00%

The data presented in Table 2 show the demographic distribution of respondents in terms of age. Out of the total 22 respondents, the largest proportions are found in the 20–29 years old and 30–39 years old age groups, each with 7 respondents or 31.82%. This indicates that a combined 63.64% of the participants belong to the 20–39 age bracket, representing a predominantly young to early middle-aged population. Meanwhile, 3 respondents (13.64%) fall within the 40–49 years old group, 2 respondents (9.08%) are aged 50–59 years, and another 3 respondents (13.64%) are 60 years old and above, reflecting the presence of older and more experienced individuals in the sample.

This distribution suggests a diverse age composition, with a strong concentration in early adulthood and early middle adulthood. In academic and professional contexts, individuals within the 20–39 age range are often more actively engaged in research, innovation, and the adoption of emerging technologies. It indicates that younger

and mid-career professionals are generally more adaptable to technological advancements and are more likely to participate in research-related activities due to their exposure to modern educational practices and continuous professional development (OECD, 2023).

At the same time, the inclusion of respondents aged 40 and above provides valuable perspectives shaped by experience and long-term professional engagement. Literature emphasizes that older individuals often contribute deeper insights, institutional knowledge, and more stable decision-making patterns, which can enrich the overall findings of a study (Desjardins & Warnke, 2022). Their presence ensures that the research captures both contemporary and experienced viewpoints.

The relatively even distribution between the two largest age groups (20–29 and 30–39) also suggests a balanced representation of younger professionals and those who are more established in their careers. However, the smaller number of respondents in the older age categories should be considered when interpreting the results, as it may slightly limit the generalizability of findings across all age groups.

In summary, Table 2 reveals that the respondents are predominantly within the 20–39 age range, while still maintaining representation from older age groups. This balanced yet youth-leaning distribution enhances the study by incorporating both dynamic and experience-based perspectives, contributing to a more comprehensive understanding of the research variables.

Table 3 Demographic Profile in Terms of Educational Qualifications

Educational Qualifications	Frequency	Percentage
Bachelor's Degree	10	45.45%
Masteral Degree	7	31.82%
Doctoral Degree	5	22.73%
Total	22	100.00%

The data presented in Table 3 show the demographic distribution of respondents in terms of educational qualifications. Out of the 22 respondents, the largest group consists of those holding a Bachelor's degree, with 10 individuals or 45.45%. This is followed by respondents with a Masteral degree, comprising 7 individuals or 31.82%, while those with a Doctoral degree account for 5 respondents or 22.73%. These results indicate that although the plurality of respondents are undergraduate degree holders, a majority (54.55%) have pursued advanced education at the graduate and doctoral levels.

This distribution suggests that the sample is academically well-qualified, with a substantial proportion possessing higher-level educational attainment. In higher education settings, particularly within teacher education and arts and sciences disciplines, the pursuit of graduate and postgraduate degrees is often encouraged to enhance professional competence, research capability, and academic advancement. It indicates that higher educational attainment is strongly associated with increased engagement in research activities, critical thinking, and evidence-based practices (OECD, 2023).

Moreover, respondents with masteral and doctoral degrees are likely to have more extensive exposure to research methodologies, scholarly writing, and analytical processes. Literature highlights that individuals with advanced degrees tend to demonstrate stronger competencies in information literacy, problem-solving, and academic inquiry, which can positively influence the quality and reliability of research responses (Desjardins & Ioannidou, 2021). Their presence in the sample contributes to the intellectual depth and credibility of the study.

At the same time, the significant proportion of bachelor's degree holders suggests the inclusion of participants who may be in the early stages of their professional or academic careers. This combination of undergraduate and graduate-level respondents provides a diverse range of perspectives, balancing emerging knowledge with advanced expertise. Research indicates that such diversity enhances the comprehensiveness of findings by incorporating varying levels of experience, training, and cognitive approaches (UNESCO, 2022).

Furthermore, the distribution reflects broader global trends in education, where there is a continuous increase in

postgraduate enrollment as individuals seek to improve their qualifications and career prospects. According to recent reports, lifelong learning and continuing professional development are becoming essential components of modern education systems (OECD, 2023).

In summary, Table 3 reveals that the respondents possess a diverse yet generally high level of educational attainment, with a majority having completed graduate or doctoral studies. This strengthens the study by ensuring that participants are equipped with the necessary academic background to provide informed and meaningful insights.

Table 4 Demographic Profile in Terms of Civil Status

Civil Status	Frequency	Percentage
Single	12	54.55%
Married	9	40.90%
Separated	0	0.00%
Widowed	1	4.55%
Total	22	100.00%

The data presented in Table 4 show the demographic distribution of respondents in terms of civil status. Out of the 22 respondents, the majority are single, with 12 individuals or 54.55%, followed by married respondents with 9 individuals or 40.90%. Only 1 respondent (4.55%) is widowed, while no respondents reported being separated. These results indicate that more than half of the participants are unmarried, although a considerable portion is already in marital relationships.

This distribution suggests a diverse composition of life circumstances among the respondents, with both single and married individuals well represented. The predominance of single respondents may be associated with the age distribution of the sample, particularly the higher proportion of individuals in the early stages of adulthood, where marriage is often delayed due to educational and career pursuits. It highlights that individuals engaged in higher education and professional development tend to postpone marriage as they prioritize academic advancement and career establishment (OECD, 2023).

On the other hand, the substantial percentage of married respondents reflects the presence of individuals with family responsibilities, which may shape their perspectives, priorities, and decision-making processes. Literature suggests that marital status can influence social values, economic considerations, and long-term planning, as married individuals are often more focused on stability, family welfare, and community-oriented concerns (UNESCO, 2022). These differences may contribute to varied viewpoints within the study.

The minimal representation of widowed respondents and the absence of separated individuals indicate that these groups are less prevalent in the sample. While their limited number may restrict comparative analysis, their inclusion still contributes to the overall diversity of the respondent profile.

Furthermore, recent research indicates that while civil status provides important contextual information, it is not always a primary determinant of attitudes and behaviors in academic and professional settings. Factors such as education, institutional environment, and access to resources often play a more significant role in shaping individuals' perspectives and actions (Desjardins & Ioannidou, 2021).

In summary, Table 4 reveals that the majority of respondents are single, with a significant portion being married and minimal representation from other categories. This distribution reflects common demographic trends in academic environments and contributes to a range of perspectives shaped by different life stages and social roles.

Table 5 Demographic Profile in Terms of Length of Service

Length of Service	Frequency	Percentage
1-10 years	10	45.45%
11-20 years	7	31.82%

21 years and above	5	22.73%
Total	22	100.00%

The data presented in Table 5 show the demographic distribution of respondents in terms of length of service. Out of the 22 respondents, the largest group consists of those with 1–10 years of service, accounting for 10 individuals or 45.45%. This is followed by respondents with 11–20 years of service, comprising 7 individuals or 31.82%, while those with 21 years and above represent 5 respondents or 22.73%. These findings indicate that nearly half of the participants are in the early stage of their professional careers, while a substantial proportion has accumulated moderate to extensive experience.

This distribution reflects a balanced representation of early-career, mid-career, and highly experienced professionals. The predominance of respondents with 1–10 years of service suggests a workforce that is still actively developing professional competencies and adapting to evolving academic and technological demands. It highlights that early-career professionals are generally more open to innovation and more likely to engage with emerging technologies and research practices as part of their continuous professional development (OECD, 2023).

At the same time, the presence of respondents with 11–20 years and more than 21 years of service indicates the inclusion of experienced educators who bring valuable institutional knowledge, expertise, and long-term perspectives. Literature suggests that individuals with longer service tend to exhibit greater confidence in decision-making, deeper understanding of organizational systems, and a more refined approach to professional responsibilities (Desjardins & Warnke, 2022). Their participation enhances the depth and reliability of the study's findings.

The gradual distribution across service categories also demonstrates professional diversity, which is important in capturing a wide range of insights. Early-career respondents may offer perspectives shaped by recent training and exposure to modern practices, while more experienced respondents may rely on accumulated knowledge and practical experience. Research indicates that such diversity strengthens the comprehensiveness of research outcomes by incorporating varied viewpoints and experiences (UNESCO, 2022).

Furthermore, respondents with over 21 years of service often play key roles in leadership, mentoring, and institutional development. Their inclusion ensures that the study reflects both contemporary practices and established traditions within the academic setting.

In summary, Table 5 reveals that the respondents represent a wide range of professional experience, with a higher concentration in the early-career stage but substantial representation from mid- and late-career individuals. This balanced distribution contributes to a more comprehensive and credible understanding of the study by integrating perspectives from different stages of professional development.

Table 6 Demographic Profile in Terms of Digital Tools

Digital Tool	Frequency	Percentage
Microsoft Teams	1	4.55%
Google Classroom	16	72.72%
Canvas	5	22.73%
Total	22	100.00%

The data presented in Table 6 show the demographic distribution of respondents in terms of digital tools used. Out of the 22 respondents, the majority utilize Google Classroom, with 16 users or 72.72%, followed by Canvas with 5 users or 22.73%, and only 1 respondent or 4.55% uses Microsoft Teams. These results clearly indicate that Google Classroom is the most widely used digital platform among the respondents.

This distribution suggests a strong preference for Google Classroom as the primary learning management system (LMS) within the group. Its dominance may be attributed to its accessibility, ease of use, and seamless integration with other Google services, which are widely utilized in academic environments. It highlights that Google

Classroom remains one of the most adopted LMS platforms in educational institutions due to its user-friendly interface and efficiency in managing coursework, communication, and assessment (OECD, 2023).

The presence of Canvas as the second most used platform indicates that a portion of respondents are also engaged with more structured and feature-rich LMS environments. Canvas is often preferred for its advanced functionalities, including analytics, customization, and integration with institutional systems. Literature suggests that platforms like Canvas are commonly adopted in higher education institutions seeking more comprehensive digital learning ecosystems (Zawacki-Richter et al., 2022).

On the other hand, the minimal use of Microsoft Teams suggests that it is less commonly utilized as a primary instructional platform among the respondents. While Microsoft Teams is widely recognized as a collaboration and communication tool, its role as a full learning management system may be perceived as limited compared to dedicated LMS platforms. Research indicates that educators tend to prefer platforms specifically designed for teaching and learning over general-purpose collaboration tools when managing academic activities (UNESCO, 2022).

The overall distribution reflects the growing reliance on digital platforms in education, particularly in the context of blended and online learning environments. The high usage of Google Classroom demonstrates a trend toward accessible and cloud-based solutions that support flexible teaching and learning practices. Additionally, the variation in platform usage suggests that respondents are exposed to multiple digital tools, contributing to their digital competence and adaptability.

In summary, Table 6 reveals that Google Classroom is the dominant digital tool among the respondents, followed by Canvas, with minimal use of Microsoft Teams. This pattern reflects current trends in educational technology adoption, where user-friendly and purpose-built learning management systems are preferred for academic activities.

Table 7 Level of Attitude of College of Teacher Education Arts and Sciences Teachers on Collaborative Online Learning

Indicators	Sd	Mean	Interpretation
1. I believe collaborative online learning improves students' understanding of lessons.	0.72	2.95	Agree
2. I have a positive perception of implementing online group activities.	0.58	3.36	Strongly Agree
3. I feel comfortable facilitating online group discussions.	0.69	2.23	Disagree
4. I believe teamwork is effective in an online teaching environment.	0.59	2.41	Disagree
5. I find collaborative online learning beneficial for students.	0.59	2.59	Agree
6. I believe collaborative learning enhances students' critical thinking skills.	0.69	1.77	Disagree
7. I feel motivated to use collaborative strategies in online teaching.	0.51	1.45	Strongly Disagree
8. I trust students to contribute fairly in online group tasks.	0.59	2.18	Disagree
9. I believe online collaboration prepares students for real-world teamwork.	0.76	2.00	Disagree
10. I think online discussions help clarify difficult topics.	0.59	1.82	Disagree
11. I find collaborative online learning engaging for students.	0.58	2.05	Disagree
12. I believe group interaction online enhances learning outcomes.	0.59	1.82	Disagree
13. I feel confident guiding students in online collaboration.	0.59	1.59	Strongly Disagree
14. I believe online collaboration promotes active student participation.	0.58	1.64	Strongly Disagree
15. I see value in using digital tools for collaborative teaching.	0.79	1.95	Disagree
Average Mean	2.12		Disagree

Scale: 3.26 - 4.00 “Strongly Agree”; 2.51 – 3.25 “Agree”; 1.76 – 2.50 “Disagree”; 1.00 – 1.75 “Strongly Disagree”

The data presented in Table 7 show the level of attitude of College of Teacher Education Arts and Sciences teachers toward Collaborative Online Learning (COL). The overall average mean of 2.12, interpreted as Disagree, indicates that respondents generally hold a negative attitude toward the implementation of collaborative online learning. This suggests that while some aspects of COL are viewed positively, a considerable number of indicators reflect hesitation, discomfort, and lack of confidence in applying collaborative strategies in online teaching environments.

Among the indicators, only a few items obtained positive responses. Teachers strongly agree that they have a positive perception of implementing online group activities ($M = 3.36$, $SD = 0.58$), and they agree that collaborative online learning improves students’ understanding ($M = 2.95$) and is beneficial for students ($M = 2.59$). These findings indicate that respondents recognize the potential value and theoretical benefits of collaborative online learning. Recent studies support this view, emphasizing that collaborative learning environments can enhance student engagement, knowledge construction, and interaction when effectively implemented (Martin et al., 2022).

However, most indicators fall under Disagree and Strongly Disagree, revealing several critical concerns. Teachers reported discomfort in facilitating online group discussions ($M = 2.23$), lack of trust in students’ fair participation ($M = 2.18$), and doubts about the effectiveness of teamwork in online settings ($M = 2.41$). Furthermore, very low mean scores were observed in motivation ($M = 1.45$), confidence in guiding collaboration ($M = 1.59$), and belief in promoting active participation ($M = 1.64$), all interpreted as Strongly Disagree. These results suggest that teachers experience low confidence, limited readiness, and motivational challenges in implementing collaborative online strategies.

The findings align with recent literature indicating that despite the recognized benefits of collaborative online learning, many educators face barriers such as insufficient training, lack of technological support, and difficulties in managing online group dynamics (Rapanta et al., 2021). Additionally, studies highlight that issues such as unequal participation, lack of student accountability, and limited interaction quality often contribute to negative perceptions of online collaboration (Bond et al., 2021).

Moreover, the low scores in indicators related to critical thinking ($M = 1.77$), engagement ($M = 2.05$), and learning outcomes ($M = 1.82$) suggest that teachers are not fully convinced of the effectiveness of collaborative online learning in achieving deeper educational outcomes. This may be attributed to challenges in designing meaningful collaborative tasks and monitoring student participation in virtual environments. According to recent research, the success of collaborative online learning largely depends on proper instructional design, facilitation skills, and the use of appropriate digital tools (OECD, 2023).

The overall negative attitude reflected in the average mean indicates a gap between theoretical understanding and practical implementation. While teachers acknowledge the potential benefits of collaborative online learning, they may lack the necessary skills, confidence, or institutional support to effectively apply it in practice.

In summary, Table 7 reveals that teachers generally hold a negative attitude toward collaborative online learning, despite recognizing some of its benefits. The findings highlight the need for professional development, training, and institutional support to enhance teachers’ confidence, motivation, and competence in implementing collaborative strategies in online learning environments.

Table 8 Level of Behavior of College of Teacher Education Arts and Sciences Teachers on Collaborative Online Learning

Indicators	Sd	Mean	Interpretation
1. I facilitate online group discussions in my classes.	0.65	3.05	Agree
2. I encourage students to contribute ideas during online collaboration.	0.51	3.45	Strongly Agree

3. I assign group tasks in online learning environments.	0.51	2.55	Agree
4. I communicate regularly with students through online platforms.	0.51	2.5	Disagree
5. I use digital tools (e.g., Google Docs, LMS) for collaboration.	0.66	2.18	Disagree
6. I respond promptly to students' online queries.	0.51	2.5	Disagree
7. I guide students in understanding lessons during collaboration.	0.61	3.09	Agree
8. I share relevant materials with students online.	0.59	3.18	Agree
9. I conduct scheduled online collaborative activities.	0.70	2.73	Agree
10. I promote respect during online discussions.	0.43	3.77	Strongly Agree
11. I take initiative in organizing online group activities.	0.46	3.73	Strongly Agree
12. I encourage students to ask questions during collaboration.	0.50	3.41	Strongly Agree
13. I provide feedback on students' collaborative work.	0.50	3.41	Strongly Agree
14. I monitor students' engagement during online sessions.	0.50	2.59	Agree
15. I enforce rules and responsibilities in online group work.	0.49	3.64	Strongly Agree
Average Mean	3.05		Agree

Scale: 3.26 - 4.00 “Strongly Agree”; 2.51 – 3.25 “Agree”; 1.76 – 2.50 “Disagree”; 1.00 – 1.75 “Strongly Disagree”

The data presented in Table 8 show the level of behavior of College of Teacher Education Arts and Sciences teachers toward Collaborative Online Learning (COL). The overall average mean of 3.05, interpreted as Agree, indicates that respondents generally demonstrate a positive level of behavioral engagement in implementing collaborative online learning practices. This suggests that, despite varying challenges, teachers are actively involved in facilitating and managing online collaborative activities in their instructional practices.

Among the indicators, several items obtained strong agreement, particularly in promoting respectful online interactions ($M = 3.77$), taking initiative in organizing online group activities ($M = 3.73$), enforcing rules and responsibilities in group work ($M = 3.64$), encouraging student participation and questioning ($M = 3.41$), and providing feedback on collaborative work ($M = 3.41$). These results indicate that teachers are highly active in creating a structured, respectful, and participatory online learning environment. Recent studies emphasize that effective online collaboration depends heavily on instructor presence, clear facilitation, and consistent feedback, which significantly enhance student engagement and learning outcomes (Rapanta et al., 2021; Martin et al., 2022).

In addition, respondents agree that they facilitate online group discussions ($M = 3.05$), assign group tasks ($M = 2.55$), guide students during collaboration ($M = 3.09$), share learning materials ($M = 3.18$), and conduct scheduled collaborative activities ($M = 2.73$). These findings suggest that teachers are actively implementing core collaborative teaching strategies in their online classes. According to recent literature, structured group tasks and guided facilitation are essential components of successful collaborative online learning environments, as they promote interaction, accountability, and knowledge sharing among students (OECD, 2023).

However, some indicators received lower ratings, particularly in areas related to communication consistency and digital tool utilization. Teachers reported disagreement in regularly communicating with students through online platforms ($M = 2.50$), responding promptly to queries ($M = 2.50$), and using digital collaboration tools such as Google Docs or LMS features ($M = 2.18$). These results suggest challenges in maintaining continuous communication and fully maximizing available digital tools for collaboration. Studies have shown that limited familiarity with digital platforms and workload constraints often hinder consistent teacher-student interaction in online environments (Bond et al., 2021).

The mixed results indicate that while teachers demonstrate strong engagement in structured and instructional aspects of collaborative online learning, there are gaps in communication efficiency and digital tool integration.

This suggests that teachers may be more comfortable with traditional instructional strategies adapted to online settings, rather than fully leveraging advanced digital collaboration technologies.

Overall, Table 8 reveals that teachers exhibit a generally positive behavioral engagement in collaborative online learning, particularly in facilitating discussions, guiding students, and maintaining classroom structure. However, improvements are needed in the consistent use of digital tools and communication practices to fully optimize collaborative online learning environments.

Table 9 Test Of Significant Relationship Between the College of Teacher Education Arts and Sciences Teachers' Level of Attitude and Their Behavior Toward Collaborative Online Learning

Test Variables	p-value	Decision
Level of attitude vs Level of Behavior	0.33	Retain Ho

Note: If $p \leq 0.05$, with a significant relationship

The data presented in Table 9 show the test of significant relationship between the level of attitude and the level of behavior of College of Teacher Education Arts and Sciences teachers toward Collaborative Online Learning (COL). The computed p-value of 0.33 is greater than the 0.05 level of significance; therefore, the null hypothesis (H_0) is retained, indicating that there is no statistically significant relationship between teachers' attitudes and their actual behavior toward collaborative online learning.

This finding implies that even though teachers may have varying perceptions or attitudes toward collaborative online learning, these attitudes do not necessarily translate into corresponding behavioral practices. In other words, a positive or negative attitude toward COL does not significantly predict how teachers actually implement collaborative strategies in their online teaching. This suggests a possible disconnect between cognitive disposition and instructional practice.

This result aligns with established behavioral theories, particularly the Theory of Planned Behavior, which posits that behavior is not determined by attitude alone but is also influenced by subjective norms and perceived behavioral control (Ajzen, 2020). In the context of online teaching, even if teachers hold favorable attitudes toward collaborative learning, external factors such as technological constraints, workload, institutional support, and digital competence may affect their ability to translate these attitudes into consistent practice.

Recent studies in educational technology also support this interpretation, indicating that the relationship between attitude and actual teaching behavior in online environments is often weak or inconsistent. It suggests that while educators may express positive attitudes toward collaborative online learning, practical implementation is frequently hindered by limited training, inadequate digital infrastructure, and time constraints (Bond et al., 2021; Rapanta et al., 2021).

Furthermore, the absence of a significant relationship may indicate that collaborative online learning practices among teachers are influenced more by situational and institutional factors rather than personal attitudes alone. For example, teachers may be required to implement certain online strategies due to curriculum requirements or institutional policies, regardless of their individual preferences.

In summary, Table 9 reveals that there is no significant relationship between teachers' attitudes and their behaviors toward collaborative online learning. This suggests that positive attitudes alone are insufficient to ensure effective implementation, highlighting the importance of addressing external barriers such as training, resources, and institutional support to bridge the gap between attitude and practice.

Table 10 Test Of Significant Difference in the Level of Attitude of College of Teacher Education Arts and Sciences Teachers Regarding Collaborative Online Learning When Grouped According to Their Demographic Profile

Test Variables	p-value	Decision
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<i>Level of attitude vs Gender</i>	0.53	Retain Ho
<i>Level of attitude vs Age</i>	0.50	Retain Ho
<i>Level of attitude vs Educational Qualifications</i>	0.06	Retain Ho
<i>Level of attitude vs Civil Status</i>	0.29	Retain Ho
<i>Level of attitude vs Length of Service</i>	0.15	Retain Ho
<i>Level of attitude vs Digital Tools</i>	0.19	Retain Ho

Note: If $p \leq 0.05$, with a significant difference

The data presented in Table 10 show the test of significant difference in the level of attitude of College of Teacher Education Arts and Sciences teachers toward Collaborative Online Learning (COL) when grouped according to their demographic profile, including gender, age, educational qualifications, civil status, length of service, and digital tools used. The results reveal that all computed p-values are greater than the 0.05 level of significance: gender ($p = 0.53$), age ($p = 0.50$), educational qualifications ($p = 0.06$), civil status ($p = 0.29$), length of service ($p = 0.15$), and digital tools ($p = 0.19$). Therefore, the null hypothesis (H_0) is retained for all variables, indicating that there are no statistically significant differences in teachers' attitudes toward collaborative online learning when grouped according to their demographic characteristics.

This finding implies that teachers' attitudes toward collaborative online learning are relatively uniform across different demographic groups. In other words, factors such as gender, age, academic qualification, marital status, teaching experience, and the type of digital tools used do not significantly influence how teachers perceive collaborative online learning. This suggests that attitudes toward COL are generally shared among respondents regardless of their personal or professional background.

The result aligns with recent studies in educational technology, which suggest that demographic variables are becoming less influential in shaping attitudes toward digital learning environments, particularly in higher education contexts where exposure to technology is widespread. It indicates that attitudes toward online and collaborative learning are more strongly influenced by factors such as perceived usefulness, institutional support, and digital competence rather than demographic characteristics (Bond et al., 2021; OECD, 2023).

Moreover, the non-significant result for age and gender suggests that both younger and older teachers, as well as male and female respondents, share similar perspectives on collaborative online learning. This reflects the increasing normalization of digital teaching practices across generations and genders. Similarly, the lack of significant differences in educational qualifications and length of service suggests that both early-career and experienced educators hold comparable attitudes toward COL, possibly due to shared institutional exposure and training.

The non-significant result for digital tools used also indicates that familiarity with specific platforms (e.g., Google Classroom, Canvas, or Microsoft Teams) does not significantly alter teachers' attitudes toward collaborative online learning. This may suggest that attitudes are shaped more by general perceptions of online learning rather than by specific technological tools.

In summary, Table 10 reveals that there are no significant differences in teachers' attitudes toward collaborative online learning when grouped according to demographic profile. This indicates a broadly consistent positive orientation toward COL across the College of Teacher Education Arts and Sciences, highlighting the role of shared institutional experience in shaping attitudes toward digital teaching practices.

Table 11 Test Of Significant Difference In The Level of Behavior of College of Teacher Education Arts and Sciences Teachers Regarding Collaborative Online Learning When Grouped According to Their Demographic Profile

Test Variables	p-value	Decision
<i>Level of behavior vs Gender</i>	0.30	Retain Ho
<i>Level of behavior vs Age</i>	0.47	Retain Ho
<i>Level of behavior vs Educational Qualifications</i>	0.52	Retain Ho

<i>Level of behavior vs Civil Status</i>	0.63	Retain Ho
<i>Level of behavior vs Length of Service</i>	0.52	Retain Ho
<i>Level of behavior vs Digital Tools</i>	0.77	Retain Ho

Note: If $p \leq 0.05$, with a significant difference

The data presented in Table 11 show the test of significant difference in the level of behavior of College of Teacher Education Arts and Sciences teachers toward Collaborative Online Learning (COL) when grouped according to their demographic profile, including gender, age, educational qualifications, civil status, length of service, and digital tools used. The results reveal that all computed p-values are greater than the 0.05 level of significance: gender ($p = 0.30$), age ($p = 0.47$), educational qualifications ($p = 0.52$), civil status ($p = 0.63$), length of service ($p = 0.52$), and digital tools used ($p = 0.77$). Hence, the null hypothesis (H_0) is retained for all variables, indicating that there are no statistically significant differences in teachers' behavioral practices toward collaborative online learning when grouped according to their demographic characteristics.

This finding suggests that teachers' actual engagement in collaborative online learning practices is consistent across different demographic groups. In other words, demographic factors such as gender, age, educational attainment, marital status, years of teaching experience, and the type of digital tools used do not significantly influence how teachers implement or demonstrate collaborative online learning behaviors. This implies a relatively uniform pattern of behavioral practice among respondents.

The result aligns with recent literature in educational technology, which emphasizes that behavioral adoption of digital learning practices is more strongly influenced by factors such as digital literacy, institutional support, perceived usefulness of technology, and access to resources rather than demographic characteristics alone (Bond et al., 2021; OECD, 2023). In modern higher education environments, exposure to digital tools and institutional training programs often standardizes teaching practices across diverse groups of educators.

Furthermore, the non-significant results for gender and age suggest that both younger and older teachers, as well as male and female respondents, exhibit similar levels of engagement in collaborative online learning practices. This reflects the increasing integration of digital teaching methodologies across all age groups and genders, reducing traditional disparities in technology use.

Similarly, the lack of significant differences in educational qualifications and length of service indicates that both novice and experienced educators demonstrate comparable behavioral engagement in COL. This may be attributed to shared professional development programs, institutional policies, and training opportunities that promote uniform adoption of online teaching strategies.

The result also shows that the type of digital tools used does not significantly affect teachers' behavior in implementing collaborative online learning. This suggests that once educators are engaged in online teaching, their behavioral practices tend to be consistent regardless of whether they use platforms such as Google Classroom, Canvas, or Microsoft Teams.

In summary, Table 11 reveals that there are no significant differences in the level of behavioral engagement in collaborative online learning among teachers when grouped according to their demographic profile. This indicates a generally consistent implementation of COL practices across the College of Teacher Education Arts and Sciences, reflecting the standardization of digital teaching practices in higher education.

COLLABORATIVE ONLINE LEARNING PROGRAM

Introduction

The increasing integration of digital technologies in education has emphasized the importance of Collaborative Online Learning (COL) as a pedagogical approach that promotes interaction, engagement, and shared knowledge construction. However, based on the findings of this study, College of Teacher Education Arts and Sciences

teachers demonstrate a negative to moderate attitude toward COL, despite showing a moderate level of behavioral implementation.

This indicates a clear attitude–behavior gap, where teachers engage in collaborative online practices but lack full confidence, motivation, and mastery of digital collaboration tools. Furthermore, the absence of significant relationships and differences across demographic profiles suggests that the issue is system-wide rather than group-specific, requiring an institutional intervention rather than targeted demographic solutions.

In response, the COLLAB-TEACH Program is proposed to enhance teachers’ confidence, digital competence, and pedagogical effectiveness in implementing Collaborative Online Learning in higher education.

Objectives of the Program

The program aims to:

1. Improve teachers’ attitudes toward Collaborative Online Learning (COL).
2. Strengthen teachers’ confidence and motivation in facilitating online collaboration.
3. Enhance teachers’ digital pedagogical skills in using online collaboration tools.
4. Bridge the gap between attitude and actual teaching behavior.
5. Promote effective use of digital platforms (Google Classroom, Canvas, Microsoft Teams).
6. Develop sustainable collaborative online teaching practices aligned with 21st-century learning.

Table 12 Collaborative Online Learning Program

Key Area	Activities	Persons Involved	Expected Outcome
COL Orientation and Mindset Development	Seminar on benefits and principles of Collaborative Online Learning	Educational experts, ICT coordinators, faculty members	Improved positive attitude and awareness of COL benefits
Digital Tool Mastery Training	Hands-on workshops on Google Classroom, Canvas, Microsoft Teams, Google Docs	ICT trainers, LMS administrators	Enhanced competence in using digital collaboration tools
Facilitating Online Collaboration	Training on managing group discussions, online teamwork strategies, and engagement techniques	Master teachers, instructional coaches	Increased confidence in facilitating online group activities
Instructional Design for COL	Development of collaborative lesson plans and online group tasks	Curriculum developers, faculty researchers	Improved lesson design integrating meaningful collaboration
Student Engagement Strategies	Techniques for improving participation, accountability, and interaction online	Education specialists	Increased student participation and engagement
Communication and Feedback Systems	Training on timely feedback, communication tools, and monitoring systems	ICT experts, teaching mentors	Improved teacher-student communication and responsiveness
Ethics and Digital Responsibility in COL	Seminar on digital citizenship, academic integrity, and responsible technology use	Ethics committee, research office	Strengthened ethical practices in online teaching
Mentoring and Peer Collaboration	Peer coaching and collaborative teaching observations	Senior faculty, peer mentors	Sustained improvement in COL implementation practices
Monitoring and Evaluation	Assessment of COL implementation effectiveness	Program coordinators, research office	Continuous improvement of COL teaching practices

The table presents a comprehensive framework for the implementation and enhancement of Collaborative Online

Learning (COL) among educators, outlining key developmental areas, corresponding activities, persons involved, and expected outcomes. Overall, it reflects a systematic approach aimed at strengthening teachers' competencies in digital pedagogy, improving instructional quality, and promoting meaningful online collaboration in teaching and learning environments.

The first key area, COL Orientation and Mindset Development, focuses on establishing a foundational understanding of Collaborative Online Learning through seminars led by educational experts, ICT coordinators, and faculty members. This stage emphasizes awareness-building on the benefits and principles of COL, which is expected to cultivate a positive attitude and openness among educators toward online collaborative teaching strategies. By strengthening foundational knowledge, teachers are better prepared to embrace digital transformation in education.

Following this, Digital Tool Mastery Training provides hands-on workshops involving platforms such as Google Classroom, Canvas, Microsoft Teams, and Google Docs, facilitated by ICT trainers and LMS administrators. This component aims to enhance teachers' technical competence in using essential digital collaboration tools. As a result, educators are expected to demonstrate increased confidence and efficiency in managing online learning environments, ensuring smoother delivery of instruction in virtual or blended settings.

The Facilitating Online Collaboration component focuses on developing teachers' skills in managing group discussions, promoting teamwork, and sustaining learner engagement in online environments. With support from master teachers and instructional coaches, this training aims to improve educators' confidence in facilitating interactive and student-centered online activities. The expected outcome is more effective implementation of collaborative learning strategies that foster active student participation.

In Instructional Design for COL, faculty members and curriculum developers work together to create collaborative lesson plans and structured online group tasks. This ensures that collaboration is intentionally embedded in instructional design rather than treated as an add-on feature. The expected outcome is improved lesson planning that integrates meaningful and purposeful student collaboration, thereby enhancing learning outcomes.

The Student Engagement Strategies component addresses the challenge of maintaining active participation in online learning. Education specialists guide teachers in applying strategies that promote accountability, interaction, and sustained engagement among students. This is expected to result in higher levels of student participation and more dynamic online classroom experiences.

Communication and Feedback Systems emphasize the importance of timely communication and structured feedback in online learning environments. ICT experts and teaching mentors train educators on using communication tools and monitoring systems effectively. The expected outcome is improved teacher-student interaction, faster feedback cycles, and more responsive instructional support, which are essential for student success in online settings.

The Ethics and Digital Responsibility in COL component highlights the importance of academic integrity, digital citizenship, and responsible use of technology. Through seminars facilitated by ethics committees and the research office, educators are guided on maintaining ethical standards in online learning environments. This ensures strengthened ethical practices and promotes responsible digital behavior among both teachers and students.

Mentoring and Peer Collaboration provides opportunities for peer coaching and collaborative teaching observations led by senior faculty and peer mentors. This encourages continuous professional development through shared experiences and reflective practice. The expected outcome is sustained improvement in COL implementation, as teachers learn from one another and refine their instructional strategies over time.

Finally, Monitoring and Evaluation ensures the effectiveness and sustainability of the COL program through regular assessment conducted by program coordinators and the research office. This continuous evaluation process allows for ongoing refinement and improvement of COL practices, ensuring that the program remains

responsive to the needs of educators and learners.

In summary, the framework presents a well-structured and progressive approach to developing educators' competencies in Collaborative Online Learning, moving from foundational awareness to advanced implementation, ethical practice, and continuous improvement.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of the study, it can be concluded that the College of Teacher Education Arts and Sciences teachers exhibit a generally negative attitude but moderately positive behavioral engagement toward Collaborative Online Learning (COL), although these two variables are not significantly related. Specifically, Table 7 shows that the overall level of attitude toward COL is Disagree ($M = 2.12$), indicating that teachers generally lack confidence, motivation, and full acceptance of collaborative online teaching strategies. In contrast, Table 8 reveals that the level of behavior is Agree ($M = 3.05$), indicating that despite negative or hesitant attitudes, teachers still actively implement collaborative online learning practices in their teaching.

In relation to the first and second objectives of the study, these findings show that while teachers are behaviorally engaged in COL practices, their attitudinal disposition remains unfavorable, suggesting a clear disconnect between perception and practice. Furthermore, Table 9 shows that there is no significant relationship between attitude and behavior ($p = 0.33$), indicating that teachers' attitudes do not directly influence their actual implementation of COL. This suggests that other factors such as institutional requirements, digital literacy, workload demands, and access to technology may be more influential in shaping teaching behavior than personal attitudes alone.

In terms of demographic influence, Tables 10 and 11 reveal that there are no significant differences in both attitude and behavior when grouped according to gender, age, educational qualifications, civil status, length of service, and digital tools used (all p -values > 0.05). This means that teachers' perceptions and practices of Collaborative Online Learning are relatively uniform across all demographic groups. Therefore, demographic characteristics do not play a significant role in shaping either attitudes or behaviors toward COL, suggesting that the issue is institutional and systemic rather than individual or group based.

In summary, in relation to the Statement of the Problem, the study concludes that: (1) teachers have a generally negative attitude toward Collaborative Online Learning; (2) teachers demonstrate a moderately positive level of behavioral engagement in COL practices; (3) there is no significant relationship between attitude and behavior; and (4) there are no significant differences in attitude and behavior when grouped according to demographic profile.

Overall, the findings indicate that while Collaborative Online Learning is already being practiced in instructional settings, its implementation is not strongly driven by positive attitudes but rather by external or institutional factors. The presence of an attitude-behavior gap highlights the need for targeted interventions such as professional development, digital pedagogy training, and improved institutional support systems. This strongly supports the proposed COLLAB-TEACH Program, which aims to enhance teachers' confidence, improve digital competence, and align attitudes with effective and sustainable collaborative online teaching practices in higher education.

Considering the findings that teachers demonstrate a generally negative attitude toward Collaborative Online Learning (COL) but still exhibit a moderately positive level of behavioral implementation, and that no significant relationships or differences exist across demographic profiles, the following recommendations are proposed to strengthen the effective, consistent, and sustainable integration of COL in higher education.

For Educators. Educators are encouraged to enhance their confidence, motivation, and pedagogical readiness in implementing Collaborative Online Learning through continuous professional development and reflective practice. Although teachers are already engaging in COL activities, the negative attitude identified suggests the need to strengthen their understanding of its pedagogical value and effectiveness. Educators should actively participate in training programs focused on online facilitation skills, student engagement strategies, and the

effective use of digital collaboration tools such as Google Classroom, Canvas, and Microsoft Teams. They are also encouraged to shift from traditional online teaching approaches toward more structured and intentional collaborative learning designs. Moreover, teachers should strengthen their digital communication practices, ensure consistent feedback, and promote equitable student participation to maximize learning outcomes in online environments.

For Educational Institutions and Administrators. Educational institutions and administrators play a critical role in addressing the attitude–behavior gap identified in the study. It is recommended that institutions implement structured and sustained capacity-building programs focused on Collaborative Online Learning, including hands-on training, mentoring, and instructional coaching. Since attitudes were found to be generally negative despite active usage, institutional leaders should prioritize initiatives that build teacher confidence, reduce workload barriers, and provide adequate technical and instructional support. Furthermore, schools and universities should invest in reliable digital infrastructure, provide access to advanced learning management systems, and ensure continuous technical assistance for faculty members. Administrators should also establish clear policies and guidelines that promote consistent implementation of COL while recognizing and rewarding innovative teaching practices that effectively integrate collaboration and technology.

For Curriculum Developers and Policymakers. Curriculum developers and policymakers are encouraged to integrate Collaborative Online Learning competencies into teacher education curricula and professional standards. This includes embedding digital pedagogy, online facilitation skills, and collaborative instructional design into both pre-service and in-service teacher training programs. Given that demographic factors were found to have no significant influence on attitudes and behaviors, COL-related competencies should be treated as universal skills required of all educators regardless of age, experience, or educational background. Policymakers should also develop national or institutional frameworks that support standardized implementation of COL, ensuring alignment between curriculum goals and digital teaching practices. Additionally, policies should emphasize sustainable professional development programs, equitable access to digital tools, and the promotion of learner-centered, technology-enhanced instruction.

For Future Researchers. Future researchers are encouraged to further explore the underlying causes of the attitude–behavior gap identified in this study. Since attitude does not significantly predict behavior, future studies may examine additional influencing variables such as digital literacy, technological self-efficacy, institutional support, workload intensity, perceived ease of use, and training exposure. Mixed-methods or qualitative approaches are also recommended to gain deeper insights into teachers lived experiences, challenges, and perceptions of Collaborative Online Learning. Furthermore, comparative studies across institutions, regions, or academic disciplines may provide broader understanding of COL implementation in different contexts. Longitudinal research is also recommended to examine how attitudes and behaviors toward COL evolve over time, especially as digital technologies continue to advance. Lastly, future studies may evaluate the effectiveness of intervention programs such as COL training models to determine their impact on bridging the gap between attitude and practice.

REFERENCES

1. Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
2. Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies*, 2(4), 314–324.
3. Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies*, 2(4), 314–324. <https://doi.org/10.1002/hbe2.195>
4. Bokolo, A. J. (2021). Predicting academic staffs' behavior intention and actual use of blended learning in higher education. *Technology, Knowledge and Learning*, 28, 1223–1269.
5. Bond, M., Bedenlier, S., Marín, V. I., & Händel, M. (2021). Emergency remote teaching in higher education: Mapping the first global online semester. *International Journal of Educational Technology in Higher Education*, 18(1), 1–24. <https://doi.org/10.1186/s41239-021-00282-0>
6. Bond, M., Bedenlier, S., Marín, V. I., & Händel, M. (2023). Emergency remote teaching in higher

- education: Mapping the first global online semester. *International Journal of Educational Technology in Higher Education*, 20(1), 1–24. <https://doi.org/10.1186/s41239-021-00282-x>
7. Cheng, S. L., & Xie, K. (2021). Why college students procrastinate in online courses: A self-regulated learning perspective. *Internet and Higher Education*, 50, 100807. <https://doi.org/10.1016/j.iheduc.2021.100807>
8. Chou, C., & Chou, C. (2021). Investigating teachers' continuance intention toward online teaching. *Educational Technology Research and Development*, 69, 1–20.
9. Desjardins, R., & Ioannidou, A. (2021). The political economy of adult learning systems. *European Journal of Education*, 56(2), 1–15. <https://doi.org/10.1111/ejed.12449>
10. Desjardins, R., & Warnke, A. J. (2022). Ageing and skills: The role of experience in professional development. *International Journal of Lifelong Education*, 41(2), 1–18. <https://doi.org/10.1080/02601370.2021.1960925>
11. Hamiza, H., et al. (2020). Adoption of e-learning platforms based on the theory of planned behavior. *Computers & Education*, 150, 103–112.
12. Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
13. Hung, M. L., & Jeng, I. (2020). Factors influencing educators' intention to use online teaching platforms. *Educational Technology & Society*, 23(3), 45–58.
14. Khan, M. A., et al. (2022). Cultural influences on acceptance of distance education. *International Journal of Educational Research*, 114, 102–110.
15. König, J., Jäger-Biela, D. J., & Glutsch, N. (2020). Adapting to online teaching during COVID-19: School teachers' attitudes and behaviors. *European Journal of Teacher Education*, 43(4), 608–622. <https://doi.org/10.1080/02619768.2020.1809650>
16. König, J., Jäger-Biela, D. J., & Glutsch, N. (2020). Adapting to online teaching during COVID-19: Teachers' competence and confidence. *European Journal of Teacher Education*, 43(4), 608–622. <https://doi.org/10.1080/02619768.2020.1809650>
17. Lung-Guang, N. (2020). Self-regulated learning and planned behavior in MOOCs. *Education and Information Technologies*, 25, 1–15.
18. Maheshwari, G. (2021). Factors influencing students' intention to study online. *Education and Information Technologies*, 26, 1–18.
19. Martin, F., Sun, T., & Westine, C. D. (2022). A systematic review of research on online teaching and learning from 2009 to 2021. *Computers & Education*, 159, 104009. <https://doi.org/10.1016/j.compedu.2020.104009>
20. Martin, F., Sun, T., & Westine, C. D. (2022). A systematic review of research on online teaching and learning from 2009 to 2018. *Computers & Education*, 159, 104009. <https://doi.org/10.1016/j.compedu.2020.104009>
21. Martin, F., Sun, T., & Westine, C. D. (2022). A systematic review of research on online teaching and learning from 2009 to 2018. *Computers & Education*, 159, 104009. <https://doi.org/10.1016/j.compedu.2020.104009>
22. Martin, F., Sun, T., & Westine, C. D. (2022). Online teaching and learning: A systematic review. *Computers & Education*, 159, 104009. <https://doi.org/10.1016/j.compedu.2020.104009>
23. Nie, L., et al. (2020). Mobile learning adoption using the theory of planned behavior. *Computers in Human Behavior*, 107, 106–308.
24. OECD. (2021). Teachers and school leaders as lifelong learners. <https://www.oecd.org/education/teachers-and-school-leaders-as-lifelong-learners.htm>
25. OECD. (2023). Education at a glance 2023: OECD indicators. <https://www.oecd.org/education/education-at-a-glance/>
26. Organisation for Economic Co-operation and Development (OECD). (2024). Digital education outlook 2024: Towards effective collaborative learning. OECD Publishing.
27. Porter, S. R., & Whitcomb, M. E. (2021). Non-response in student surveys: The role of demographics. *Research in Higher Education*, 62(4), 1–15. <https://doi.org/10.1007/s11162-020-09587-4>
28. Pratama, A. (2021). Mobile learning acceptance among teachers. *Journal of Educational Computing Research*, 59(5), 1–17.

29. Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2021). Online university teaching during and after the COVID-19 crisis. *Postdigital Science and Education*, 3, 715–736. <https://doi.org/10.1007/s42438-020-00155-y>
30. Scherer, R., Siddiq, F., & Tondeur, J. (2021). The technology acceptance model (TAM): A meta-analysis of teachers' attitudes toward technology use. *Educational Technology Research and Development*, 69, 1–30. <https://doi.org/10.1007/s11423-020-09850-2>
31. Songkram, N., & Chootongchai, S. (2022). Continuance intention in educational technology. *Sustainability*, 14(10), 1–15.
32. Teo, T., et al. (2021). Teachers' technology acceptance and behavioral intention. *Education and Information Technologies*, 26, 1–22.
33. Trust, T., & Whalen, J. (2020). Should teachers be trained in emergency remote teaching? Lessons learned from the COVID-19 pandemic. *Journal of Technology and Teacher Education*, 28(2), 189–199. <https://www.learntechlib.org/primary/p/215995/>
34. Trust, T., & Whalen, J. (2020). Should teachers be trained in emergency remote teaching? Lessons learned from the COVID-19 pandemic. *Journal of Technology and Teacher Education*, 28(2), 189–199.
35. UNESCO. (2021). Reimagining our futures together: A new social contract for education. <https://unesdoc.unesco.org/ark:/48223/pf0000379707>
36. UNESCO. (2022). Global education monitoring report 2022. <https://www.unesco.org/en/education/gem-report>
37. UNESCO. (2022). Global education monitoring report 2022: Gender report. <https://www.unesco.org/en/education/gem-report>
38. World Bank. (2022). Remote learning during COVID-19: Lessons from today, principles for tomorrow. <https://www.worldbank.org>
39. Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2022). Systematic review of artificial intelligence applications in higher education. *International Journal of Educational Technology in Higher Education*, 19(1), 1–27. <https://doi.org/10.1186/s41239-021-00292-y>