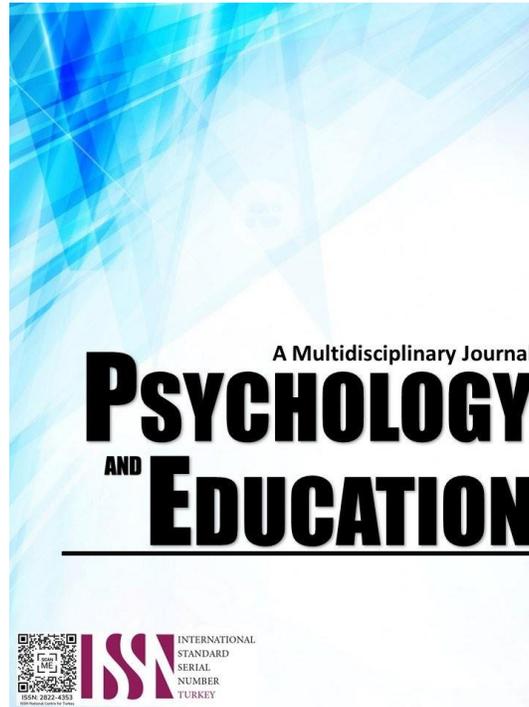


**PRESERVICE TEACHERS' TEAM-BASED LEARNING, CONNECTEDNESS,
AND GRATIFICATION LEVELS IN BLENDED LEARNING
ENVIRONMENTS IN A STATE UNIVERSITY**



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Preservice Teachers' Team-based Learning, Connectedness, and Gratification Levels in Blended Learning Environments in a State University

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Abstract

The global prominence of blended learning, notably accelerated by the COVID-19 pandemic, has led higher education institutions, including universities, to rapidly adopt blended learning models, combining online teaching resources with traditional face-to-face instruction. This study examines team-based learning, connectedness, and gratification levels among Bachelor of Elementary Education trainee teachers at Northern Iloilo State University, Main Campus, during the 2022-2023 academic year amidst blended learning. Through a stratified random technique, 166 participants were selected. Data analysis included frequency counts, percentages, means, standard deviations, ANOVA, and independent sample t-tests. Results indicated overall high levels of team-based learning, connectedness, and gratification across various demographic variables, except for a significant difference based on educational stage. The findings underscore the effectiveness of blended learning and the importance of enhancing teaching strategies for trainee teachers to foster collaboration, connectedness, and gratification. Recommendations include curriculum updates and implementing practices to improve pre-service teachers' expertise and gratification in blended learning, ultimately promoting inclusive education and effective teaching strategies in higher education institutions.

Keywords: *blended learning, team-based, connectedness, gratification*

Introduction

Blended learning has gained popularity as a practical approach for accommodating diverse student populations and enhancing the learning environment by incorporating online teaching resources (Salcedo, 2022). The COVID-19 pandemic prompted educators to creatively re-conceptualize educational practices, with higher education institutions leading the shift to online learning. According to Chamberlain et al. (2020), "Since March 2020, universities have embraced blended learning permanently following a smooth transition from in-person to virtual instruction."

Blended learning offers significant opportunities to improve educational experiences. For instance, Northern Iloilo State University employs blended learning as an alternative to fully face-to-face teaching during the pandemic, providing flexibility in terms of time, place, and audience, with technology playing a central but not exclusive role (Commission on Higher Education [CHED], 2020). Additionally, blended learning combines digital and non-digital technologies and does not necessarily depend on internet connectivity (Magsibol, 2020). Moreover, blended-based instruction, as a flexible learning strategy, fosters greater engagement and increased student participation (Alvarez, 2020). Various techniques and strategies are employed in online blended courses to cultivate connectedness, including course orientation videos, audio-visual meetings, frequent and detailed feedback, limited class size, humor, emoticons, personalized addressing, personal anecdotes, expressions of agreement or disagreement, questions, invitations for responses, and greetings (Izmirli et al., 2019).

Despite its potential, several issues and gaps need addressing. While blended learning has been favorably rated in global studies, preferences in the Philippines tend to lean towards face-to-face instruction rather than online blended learning (Christopher et al., 2020). Teacher virtual presence, learner engagement, technological support, and instructor inexperience with remote teaching significantly influence the learning process (Christopher et al., 2020). Furthermore, socioeconomic factors such as resource accessibility, parental support, gender, and domicile indirectly impact students' e-learning experiences within blended learning contexts (Li, 2022). There is also a shortage of research explicitly examining pre-service perceptions of blended learning modalities and their implementation of connectedness, team-based learning, and student gratification at Northern Iloilo State University.

Providing comprehensive training and professional development for instructors can enhance their virtual teaching skills and improve their ability to engage students online (Christopher et al., 2020). Additionally, investing in robust technological infrastructure and providing continuous technical support can ensure smooth and uninterrupted online learning experiences (CHED, 2020). Developing inclusive learning strategies that accommodate students' diverse socioeconomic backgrounds will ensure equal access to resources and support (Li, 2022). Conducting research focused on pre-service teachers' experiences and perceptions of blended learning and establishing feedback mechanisms to continuously improve and adapt blended learning strategies based on student and instructor input is also crucial (CHED, 2020).

Thus, increasing research efforts on pre-service teachers' perceptions and experiences with blended learning will inform future educational strategies and policies. Finally, establishing robust feedback mechanisms to gather insights from both students and instructors will allow for ongoing improvements in blended learning practices.

Research Questions

This study aimed to assess the degree of team-based learning, connectedness, and gratification experienced by trainee teachers in the blended learning modality. The researchers specifically sought answers to the following research questions:

1. What is the degree of perceived team-based learning among trainee teachers when considered as a whole group and classified based on gender, educational stage, domicile, and wealth level?
2. What is the degree of perceived connectedness among trainee teachers when considered as a whole group and classified based on gender, educational stage, domicile, and wealth level?
3. What is the degree of perceived gratification among trainee teachers when considered as a whole group and classified based on gender, educational stage, domicile, and Wealth level?
4. Are there significant differences in the levels of team-based learning, connectedness, and gratification among trainee teachers when classified based on gender, educational stage, domicile, and wealth level?

Literature Review

Team-based Learning

Team-Based Learning (TBL) is grounded in constructivist learning theory, which emphasizes the importance of active learning, peer review, and immediate feedback. The method involves core elements such as class preparation, group readiness assurance tests, peer evaluation, and application exercises, all designed to foster critical thinking, problem-solving, and teamwork skills among students. Levine et al. (2004) found that TBL significantly improved student performance in a psychiatry clerkship curriculum by replacing lectures with TBL activities. Similarly, Koles et al. (2010) observed higher mean scores on questions assessing knowledge of content learned via TBL compared to other methods.

The literature consistently reports positive educational outcomes from TBL, including improved knowledge acquisition, participation, and engagement. For instance, Hake (1998) found that students taught with interactive engagement methods, including TBL, exhibited learning gains almost two standard deviations higher than those observed in traditional courses. Furthermore, TBL has been shown to enhance long-term retention and critical thinking in undergraduate courses (McInerney & Fink, 2003).

Despite the promising results, several challenges and limitations have been identified in the literature. A major limitation is the lack of rigorous testing of the method, with many studies failing to include comparison groups or employ validated measurement instruments. Additionally, more research is needed on the impact of TBL on student attitudes and teamwork behaviors in subsequent work settings (Aldholay et al., 2018). Another significant gap is the limited exploration of student engagement with TBL tools, particularly in economically challenged countries (Kaba & Ramaiah, 2020). There is also a need for more research on the connection between technology-enabled TBL activities and the process of knowledge construction, as well as the overall impact on students.

"Team-based learning encompasses various instructional methods, fostering social skills essential for future careers through co-creating knowledge via negotiation and discourse," as asserted by Nussbaum (2008). Studies emphasize its benefits and factors influencing its quality, with recent attention drawn to cloud computing technologies facilitating effective TBL communities (Ali et al., 2018). Cloud-based tools like Google Apps stimulate sharing, reflection, and communication among students, enhancing both synchronous and asynchronous forms of collaboration (Al-Samarraie & Saeed, 2018). However, assessing students' engagement with these tools, particularly in economically challenged countries, remains underexplored (Kaba & Ramaiah, 2020). Further exploration is needed into the connection between activities facilitated by cloud computing and the process of knowledge construction, with particular attention to the impact of student engagement (Aldholay et al., 2018). Additionally, TBL experiences are vital in bolstering connectedness in virtual classrooms and enhancing learners' self-efficacy and engagement (Blaine, 2019). Technology tools, such as synchronous online team-based writing, have shown efficacy in increasing group communication and academic performance compared to face-to-face settings (Han & Li, 2019). Understanding and leveraging technology's role in TBL is essential for optimizing educational outcomes.

Connectedness in the New Normal

Connectedness is defined as the perception of belonging and social relationships within a community, which is essential for student health and well-being, academic success, and graduate prospects (Nkomo & Nat, 2021). The shift to remote learning during the COVID-19 pandemic significantly impacted student interaction and connectedness (Nkomo & Nat, 2021).

Research has identified several key factors that influence connectedness in remote learning environments, including usability, teacher presence, immediacy, synchronicity, and a sense of community. Immediacy, such as instant feedback and timely responses, can enhance feelings of connectedness. Similarly, teacher presence, such as through video or audio, can replicate social cues and enhance connectedness. Connectedness is positively correlated with academic performance and negatively correlated with anxiety and depressive symptoms (Yang & Huang, 2021). For example, a higher level of texting with peers is indirectly related to higher positive affect and lower depressive symptoms, while feeling close with peers is directly related to higher positive affect and lower depressive symptoms (Yang & Huang, 2021).

Despite the importance of connectedness, there are significant gaps in the literature. There is a lack of research on specific digital

resources and strategies that can enhance connectedness in remote learning environments (Hehir, E., et al, 2021). Additionally, limited research exists on the impact of connectedness on student outcomes in state universities, particularly in economically challenged contexts. To address these gaps, future research should focus on developing and evaluating digital resources that incorporate key factors influencing connectedness. Furthermore, studies should investigate the impact of connectedness on student outcomes in diverse educational contexts, including state universities in economically challenged areas (Stuart, J., 2022). By doing so, educators can develop effective strategies to enhance connectedness and improve student outcomes in the new normal of remote learning.

The significance of connectedness in online learning, crucial for fostering a genuine sense of connection, has been emphasized in educational research (Oh et al., 2018). The Community of Inquiry (CoI) model integrates both in-person and online elements to enhance cognitive skills and promote connectivity, catering to various learning preferences (Padilla & Kreider, 2018). Blended learning, incorporating diverse technologies, provides opportunities for effective teaching (Uz & Uzun, 2018). During the pandemic, instructors leveraging video, empathy, and interactive feedback fostered student connectivity in remote learning (Conklin & Garrett Dikkers, 2021). Recognizing the importance of connectedness, strategies like emojis and warm feedback enhance teacher-student relationships online (Chiu, 2021).

Despite this, the preference for face-to-face instruction persists, with students valuing the interactive and social aspects of in-person learning (Ng, 2020). Augmented reality and virtual interactions alleviate the challenges of distance in online teaching (Cesari et al., 2021). Online instruction, while challenging, has the potential to diminish hierarchical distances between instructors and students, fostering a more accessible and interconnected learning environment (Wong, 2020).

Student Gratification in Blended Learning

Blended learning, which combines traditional face-to-face instruction with online learning, has become increasingly popular in educational settings. One critical aspect of blended learning is student gratification, which refers to the satisfaction students derive from using educational technologies. This concept is crucial in understanding how students perceive and engage with blended learning environments.

Several studies have identified key factors that influence student gratification in blended learning. Min and Yu (2023) emphasize that student gratification is a significant determinant of the effectiveness of blended learning environments. Mondri et al. (2008) found that students are more likely to use technology when they believe it will meet their needs, such as developing knowledge, providing entertainment, and facilitating social collaboration. Furthermore, students who are gratified in their use of technology are more likely to continue using it, reinforcing the importance of designing engaging educational technologies. Similarly, Kaba and Ramaiah (2020) highlighted the importance of assessing student engagement with cloud-based tools, particularly in economically challenged countries, underscoring the role of technology acceptance and participation in influencing student satisfaction in blended learning environments (Deng et al., 2022).

The integration of technology into blended learning environments is critical for student engagement. Studies have shown that technologies like Google Apps can enhance collaboration and knowledge co-creation within team-based learning environments (Ali et al., 2018). However, there is a gap in the literature regarding the connection between technology-enabled team-based activities and the process of knowledge construction, as well as the impact on student outcomes like self-efficacy and academic performance (Aldholay et al., 2018).

Student perceptions of blended learning are overwhelmingly positive. Students appreciate the flexibility and autonomy that blended learning offers (Daley et al., 2016). However, there are concerns about the need for teachers to be aware of the best practices in implementing blended learning to ensure student engagement and satisfaction (de la Varre et al., 2011). Student satisfaction in blended learning encompasses a range of elements, including communication, flexibility, workload, and instructor support, all of which impact the efficacy of online education (Cheng et al., 2023).

Le and Truong (2021) examined the factors influencing satisfaction with emergency remote learning during the COVID-19 pandemic, highlighting the significance of student viewpoints. Universities undertook studies to improve the quality of education amid the pandemic (Nguyen & Doan, 2021). High satisfaction levels are associated with effective online learning (Guest et al., 2018; Fortin et al., 2019). Blended learning enhances satisfaction, comprehension, and academic performance (Anaraki, 2018). Instructors should provide support and user-friendly platforms for sustainable blended learning, considering learners' characteristics when selecting course formats (Botha, 2019).

Methodology

Research Design

This descriptive study explores pre-service teachers' perceptions of team-based learning, connectedness, and gratification in blended learning at Northern Iloilo State University. Descriptive research systematically describes phenomena and aims to provide accurate insights into these variables (McCombes, 2024). The research questions are clearly defined and aligned with the study's objectives, focusing on the degree of perceived team-based learning, connectedness, and gratification among the trainee teachers and examining

if there are significant differences in these variables.

Respondents

The study included 166 trainee teachers as respondents from the Bachelor of Elementary Education Program at Northern Iloilo State University-Main Campus during the 2022-2023 academic year.

Instruments

The study utilized an adapted research questionnaire developed initially by So & Brush (2008) to assess pre-service teachers' perceptions of team-based learning, connectedness, and gratification with blended learning. The questionnaire employed a Likert scale, divided into two parts: Part I gathered socio-demographic information, while Part II measured perceptions using a Likert Scale. The Likert Scale was used to rate levels of team-based learning, connectedness, and gratification among trainee teachers. Ratings ranged from "strongly disagree" to "strongly agree," allowing for systematic analysis of subjective perceptions. High ratings for team-based learning indicated effective collaboration and mutual support among peers, while low ratings suggested issues with team dynamics. For connectedness, high ratings reflected a strong sense of community and interpersonal relationships, whereas low ratings highlighted feelings of isolation. High ratings for gratification showed overall satisfaction with the learning experience, while low ratings indicated dissatisfaction.

Procedure

The researchers initially obtained permission from the Chairperson of the BEED program at the College of Education. Subsequently, they sought consent from the class presidents of the first-, second-, and third-year Bachelor of Elementary Education cohorts to distribute the questionnaires. Following an explanation of the study's objectives, respondents were assured that their data would be used exclusively for research purposes. Questionnaire links were shared via Google within each group chat, with respondents asked to provide screenshots as confirmation of completion.

After data collection, responses were categorized, encoded, and tabulated to facilitate statistical analysis. Visual representations such as figures and tables were employed to enhance the clarity of data interpretation. Descriptive statistics, including mean and standard deviation, were calculated to assess the perceived levels of team-based learning, connectedness, and gratification for the entire cohort and subgroup classifications.

To examine significant differences in these variables based on demographic factors, inferential statistics such as t-tests or ANOVA were conducted. These analyses provided insights into the impact of factors like gender, educational stage, domicile, and wealth level on perceptions of educational experiences among the study participants.

Ethical Considerations

Ethical considerations for the data gathering and analysis included ensuring informed consent, voluntary participation, privacy, and confidentiality of respondents' data. Permission from relevant authorities and adherence to institutional guidelines were obtained. Researchers prioritized data security, transparency, fair treatment, and the welfare of participants. Additionally, valid statistical tools and accurate reporting were used to maintain research integrity.

Results and Discussion

Perceptions of Team-Based Learning by Demographic Factors

The respondents of the study are predominantly female (92.16%), and male (7.84%) and distributed across different educational stages: freshman (31.32%), sophomore (37.34%), and Junior (31.32%). The majority resided in the mainland (83.73%), followed by the island (12.82%) and upland areas (4.21%). Wealth levels varied, with 1.92% classified as affluent, 7.22% as average earners, and 90.96% as economically challenged individuals.

The study utilized mean and standard deviation measurements to assess the perceived level of team-based learning among pre-service teachers, considering them collectively and categorizing them based on variables. The findings of the study reveal that the overall perception of team-based learning among trainee teachers ($M=3.14$, $SD=0.37$) was classified as "High." When examining gender categories, both males ($M=3.16$, $SD=0.29$) and females ($M=3.14$, $SD=0.38$) reported a "High" perception. Similarly, across different educational stages, freshmen ($M=3.01$, $SD=0.33$), sophomores ($M=3.26$, $SD=0.33$), and juniors ($M=3.13$, $SD=0.43$) indicated a "High" perception. Regarding domicile, respondents from the mainland ($M=3.39$, $SD=0.03$), island ($M=3.17$, $SD=0.29$), and upland ($M=3.40$, $SD=0.28$) areas also reported a "High" perception. When considering wealth level, those from affluent backgrounds ($M=3.06$, $SD=0.30$), average earners ($M=3.26$, $SD=0.45$), and economically challenged households ($M=3.11$, $SD=0.36$) all described their perception as "High."

Consequently, the overall perception of team-based learning among pre-service teachers, when analyzed across gender, educational stage, domicile, and wealth level, was consistently deemed as "high." This suggests a widespread positive attitude toward team-based learning methods among pre-service teachers, emphasizing the importance of incorporating such approaches into teacher training

programs to improve classroom practices and potentially address disparities.

These findings align with previous research by Setyaningrum (2018), indicating that blended learning can improve conceptual understanding and positively influence student attitudes and outcomes. They also support the study conducted by Falcione et al. (2019), which suggests that students with team-based abilities can contribute individually at various times or locations, enhancing gratification with course activities, learning outcomes, and perceptions of connectedness.

Table 1 shows the data.

Table 1. Perceptions of Team-Based Learning by Demographic Factors

Categories	N	Mean	SD	Description
A. Entire Group	166	3.14	0.37	High
B. Gender				
Male	13	3.16	0.29	High
Female	153	3.14	0.38	High
C. Educational stage				
freshman	52	3.01	0.33	High
sophomore	62	3.26	0.33	High
Junior	52	3.40	0.28	High
D. Domicile				
Mainland	139	3.39	0.03	High
Island	20	3.17	0.29	High
Upland	7	3.20	0.15	High
E. Wealth level				
Affluent	3	3.06	0.30	High
Average earners	12	3.26	0.45	High
Economically challenged	151	3.11	0.36	High

Note: Very Low (1.00-1.50), Low (1.51-2.50), High (2.51-3.50), Very High (3.51-4.00)

Perceptions of Connectedness by Demographic Factors

The mean and standard deviation were utilized to assess the perceived level of connectedness among trainee teachers as a collective group, and they were further categorized based on gender, educational stage, domicile, and wealth level.

The study's findings reveal that the overall perceived level of connectedness among trainee teachers as a whole ($M=2.96$, $SD=0.19$) was deemed "High." When analyzed by gender, both males ($M=2.93$, $SD=0.18$) and females ($M=2.96$, $SD=0.28$) exhibited a "High" level of connectedness. Similarly, across educational stages, freshmen ($M=2.98$, $SD=0.31$), sophomores ($M=2.96$, $SD=0.20$), and juniors ($M=2.95$, $SD=0.25$) reported a "High" level of connectedness. Regarding domicile, individuals from the mainland ($M=2.95$, $SD=0.25$), island ($M=2.98$, $SD=0.33$), and upland ($M=3.20$, $SD=0.40$) areas all expressed a "High" level of connectedness. Lastly, when considering wealth level, those classified as affluent ($M=3.06$, $SD=0.30$), average earners ($M=3.26$, $SD=0.45$), and economically challenged ($M=3.11$, $SD=0.36$) similarly reported a "High" level of connectedness.

Table 2 shows the data.

Table 2. Perceptions of Connectedness by Demographic Factors

Categories	N	Mean	SD	Description
A. Entire Group	166	2.96	0.19	High
B. Gender				
Male	13	2.93	0.18	High
Female	153	2.96	0.28	High
C. Educational stage				
freshman	52	2.98	0.31	High
sophomore	62	2.96	0.20	High
Junior	52	2.95	0.25	High
D. Domicile				
Mainland	139	2.95	0.25	High
Island	20	2.98	0.33	High
Upland	7	3.20	0.40	High
E. Wealth level				
Affluent	3	3.06	0.30	High
Average earners	12	3.26	0.45	High
Economically challenged	151	3.11	0.36	High

Note: Very Low (1.00-1.50), Low (1.51-2.50), High (2.51-3.50), Very High (3.51-4.00)

Consequently, the perceived high level of connectedness among pre-service teachers, irrespective of demographic disparities, highlights the significant role of nurturing a sense of community and connection in educational environments. This underscores the importance of ongoing support in bolstering collaborative learning atmospheres within teacher training programs.

The conclusions of this study are consistent with earlier research highlighting the significance of social learning in improving online learning experiences (Bali & Liu, 2018). Adeyemi et al. (2019) suggest that peer groups can have a positive or negative impact on academic performance based on their subculture. These findings are also in line with studies emphasizing the importance of independent learning in online contexts (Singh & Thurman, 2019). Furthermore, they corroborate existing research on the difficulties faced by marginalized and economically challenged students in accessing online learning resources, especially in rural areas (Esquivel, 2020), and propose that students from poor backgrounds may encounter challenges in online environments due to technological constraints, potentially exacerbating the learning divide (Van Lacker & Parolin, 2020).

Perceptions of Gratification by Demographic Factors

The mean and standard deviation were utilized to assess the perceived level of satisfaction among pre-service teachers, considering them collectively and stratified by gender, educational stage, domicile, and wealth level.

The study's findings indicated that overall, trainee teachers perceived a high level of satisfaction ($M=2.99$, $SD=0.28$). When disaggregated by gender, both males ($M=2.96$, $SD=0.32$) and females ($M=3.00$, $SD=0.27$) reported high satisfaction levels. Similarly, across educational stages, freshmen ($M=2.98$, $SD=0.26$), sophomores ($M=3.01$, $SD=0.24$), and juniors ($M=3.00$, $SD=0.31$) exhibited high satisfaction levels. Regarding domicile, those from mainland areas ($M=3.00$, $SD=0.26$), islands ($M=2.98$, $SD=0.26$), and upland regions ($M=3.14$, $SD=0.19$) all reported high satisfaction levels. Lastly, in terms of wealth level, individuals from affluent backgrounds ($M=2.75$, $SD=0.25$), average earners ($M=3.00$, $SD=0.26$), and economically challenged households ($M=3.00$, $SD=0.27$) all reported high satisfaction levels.

Consequently, irrespective of demographic differences, trainee teachers generally perceived a high level of satisfaction. These consistent levels of satisfaction highlight the positive impact of their educational experiences, underscoring the importance of leveraging these findings to enhance teaching methodologies and training programs, thereby ensuring consistently enriching learning environments.

These findings support the study by Alzahrani (2022), which found that online student gratification significantly and positively affects students' academic achievement. Moreover, this study was also supported by Yildirim and Usluel (2022), who found that students who interacted more with any component had higher achievement than those who interacted less. Table 3 shows the data.

Table 3. *Perceptions of Gratification by Demographic Factors*

Categories	N	Mean	SD	Description
A. Entire Group	166	2.99	0.28	High
B. Gender				
Male	13	2.96	0.32	High
Female	153	3.00	0.27	High
C. Educational stage				
freshman	52	2.98	0.26	High
sophomore	62	3.01	0.24	High
Junior	52	3.00	0.31	High
D. Domicile				
Mainland	139	3.00	0.26	High
Island	20	2.98	0.26	High
Upland	7	3.14	0.19	High
E. Wealth level				
Affluent	3	2.75	0.25	High
Average earners	12	3.00	0.26	High
Economically challenged	151	3.00	0.27	High

Note: Very Low (1.00-1.50), Low (1.51-2.50), High (2.51-3.50), Very High (3.51-4.00)

Differences in team-based learning, connectedness, and gratification when classified as to gender

An independent sample t-test was employed to examine variations in pre-service teachers' perceptions of team-based learning, connectedness, and gratification based on gender classification. The results indicate no significant difference in team-based learning between genders (male: $M=3.16$, $SD=0.29$; female: $M=3.13$, $SD=0.38$; $df=15.84$, $t=.337$, $p=.74$). Similarly, no notable difference was observed in connectedness based on gender (male: $M=2.93$, $SD=0.18$; female: $M=2.96$, $SD=0.28$; $df=16.97$, $t=-.526$, $p=.606$). Regarding gratification, gender classification did not yield a significant difference (male: $M=2.96$, $SD=0.32$; female: $M=3.00$, $SD=0.27$; $df=13.52$, $t=-.474$, $p=.643$). The absence of substantial differences in team-based learning, connectedness, and gratification among male and female trainee teachers suggests gender-neutral experiences, advocating for inclusive educational practices that ensure



equal opportunities and support for all students. These results challenge earlier findings by Alghamdi et al. (2020), which suggested stronger self-regulation and better outcomes in online learning for females. Thus, the hypothesis positing no significant differences in perceptions based on gender among trainee teachers regarding team-based learning, connectedness, and gratification was failed to be rejected.

Table 4 shows the data.

Table 4. *Differences in Team-based Learning, Connectedness, and Gratification when classified according to Gender*

Categories	Mean	SD	df	t	P	ETA Square
Team-based Learning						
Male	3.16	0.29	15.84	.337	.74	.0004
Female	3.13	0.38				
Connectedness						
Male	2.93	0.18	16.97	-.526	.606	.0008
Female	2.96	0.28				
Gratification						
Male	2.96	0.32	13.52	-.474	.382	.0017
Female	3.00	0.27				

*p-value less than 0.05, indicating statistical significance at the 0.05 alpha level

Differences in team-based learning, connectedness, and gratification when classified as to educational stage

A variance analysis was utilized to examine variations in team-based learning, connectedness, and gratification concerning educational stage classification. Results indicated a noteworthy difference in team-based learning across educational stages (freshman M=3.01, SD=0.33; sophomore M=3.26, SD=0.33; Junior M=3.40, SD=0.28; df=165, t=6.50, p=0.002). However, no significant difference was observed in connectedness based on educational stage (freshman M=2.98, SD=0.31, sophomore M=2.96, SD=0.20; Junior M=2.95, SD=0.28; df=165, t=0.118, p=0.889). Similarly, no significant difference was found in gratification concerning educational stage (freshman M=2.98, SD=0.26, sophomore M=3.01, SD=0.24, Junior M=3.00, SD=0.31; df=165, t=0.174, p=0.174). These results suggest a significant improvement in pre-service teachers' team-based learning skills over academic years, while connectedness and gratification levels remain steady. This underscores the importance of tailored educational support and fostering positive learning environments.

The study findings revealed significant differences in team-based learning among trainee teachers in the blended learning modality, based on their educational stage ($F(2, 87) = 4.56, p < .05$). The null hypothesis, which posited no significant difference in team-based learning across educational stages, was failed to be rejected. However, the null hypothesis regarding connectedness and gratification among pre-service teachers, when classified by educational stage, was rejected ($F(2, 87) = 1.72, p > .05$), indicating no significant differences in connectedness and gratification based on educational stage.

The results align with earlier research, like Han and Li's (2019) study, which demonstrated how technology tools can bolster group communication and collaboration. Moreover, prior investigations have highlighted the positive impact of blended learning on student satisfaction and academic achievement (Anaraki, 2018). Furthermore, satisfaction has been recognized as a pivotal aspect influencing the efficacy of online learning, as noted by Fortin et al. (2019) and Guest et al. (2018).

Table 5 shows the data.

Table 5. *Differences in Team-based Learning, Connectedness, and Gratification when Classified According to Educational stage*

Categories	Mean	SD	df	t	p	ETA Square
Team-based Learning						
freshman	3.01	0.33				
sophomore	3.26	0.33	165	6.50	0.002	0.0738
Junior	3.40	0.28				
Connectedness						
freshman	2.98	0.31				
sophomore	2.96	0.20	165	0.118	0.889	0.0014
Junior	2.95	0.25				
Gratification						
freshman	2.98	0.26				
sophomore	3.01	0.24	165	0.174	0.174	0.0021
Junior	3.00	0.31				

*p-value less than 0.05, indicating statistical significance at the 0.05 alpha level

Differences in team-based learning, connectedness, and gratification when classified as to domicile

An analysis of variance was conducted to examine the variations in team-based learning, connectedness, and gratification based on domicile classification. Results indicated no significant difference in team-based learning across domicile classifications (mainland

M=3.39, SD=0.03; island M=3.17, SD=0.29; upland M=3.20, SD=0.15; $df=165$, $t=1.80$, $p=.167$). Similarly, there was no significant difference observed in connectedness based on domicile classification (mainland M=2.95, SD=0.25; island M=2.98, SD=0.33; upland M=3.20, SD=0.40; $df=165$, $t=2.73$, $p=0.68$). Likewise, no significant difference was found in gratification across domicile classifications (mainland M=3.00, SD=0.26; island M=2.98, SD=0.26; upland M=3.14, SD=0.19; $df=165$, $t=.968$, $p=.382$).

The absence of significant differences in team-based learning, connectedness, and gratification among different places of residence suggests a uniform and fair educational experience for preservice teachers, advocating for inclusive practices regardless of geographical diversity. Based on the acceptance of the null hypothesis, which posits no significant difference in team-based learning, connectedness, and gratification among trainee teachers in the blended learning modality when classified by domicile, it can be concluded that respondents did not exhibit any differences in these variables based on their domicile.

Table 6 presents pre-service teachers' perceived Domicile, both for the entire group and when categorized by team-based learning, connectedness, and gratification. The analysis yielded a grand mean of 3.036, indicating no significant differences in these variables when considering the entire group and classifying by domicile ($p < 0.05$, significant at the 0.05 alpha level). These findings suggest that domicile did not significantly influence perceived levels of team-based learning, connectedness, and gratification among trainee teachers in the blended learning modality.

This study supports prior research by Hyo-Jeong So and Thomas Brush (2017), indicating a link between team-based learning perception, connectedness, and overall gratification in distance learning. While the impact of distance or domicile on social interaction has been explored, the concept of connectedness in distance learning contexts is relatively underexplored. Therefore, this study contributes to understanding the relationship between team-based learning and connectedness with empirical evidence. Caution is advised in implementing activities to promote student interaction, as excessive or inappropriate use may negatively impact learning outcomes.

Table 6 shows the data.

Table 6. *Differences in Team-based Learning, Connectedness, and Gratification when Classified According to Domicile*

Categories	Mean	SD	df	t	p	ETA Square
Team-based Learning						
Mainland	3.39	0.03				
Island	3.17	0.29	165	1.80	.167	0.0217
Upland	3.20	0.15				
Connectedness						
Mainland	2.95	0.25				
Island	2.98	0.33	165	2.73	.068	0.0117
Upland	3.20	0.40				
Gratification						
Mainland	3.00	0.26				
Island	2.98	0.26	165	.968	.382	0.0324
Upland	3.14	0.19				

*p-value less than 0.05, indicating statistical significance at the 0.05 alpha level

Differences in team-based learning, connectedness, and gratification when classified according to Wealth level

A variance analysis was employed to examine variations in team-based learning, connectedness, and gratification based on domicile classification. The findings indicated no notable distinction in team-based learning concerning wealth level (affluent M=3.06, SD=0.30, average earners M=3.26, SD=0.45, economically challenged M=3.11, SD=0.36; $df=165$, $t=1.99$, $p=.140$). Similarly, there was no significant disparity observed in connectedness based on wealth level (affluent M=3.06, SD=0.30, average earners M=3.26, SD=0.45, economically challenged M=3.11, SD=0.36; $df=165$, $t=.270$, $p=.764$). Likewise, no significant difference was found in gratification across wealth levels (affluent M=2.75, SD=0.26, average earners M=3.00, SD=0.26, economically challenged M=3.00, SD=0.27; $df=165$, $t=1.27$, $p=.282$). The absence of substantial differences in team-based learning, connectedness, and gratification among various wealth levels underscores a uniform and fair educational experience for pre-service teachers, advocating for inclusive approaches that cater to diverse backgrounds.

Consequently, the null hypothesis, asserting no significant difference in team-based learning, connectedness, and gratification among trainee teachers in the blended learning format when categorized by wealth level, was rejected. This implies that respondents did not exhibit variance in team-based learning, connectedness, and gratification based on wealth level.

Furthermore, Table 7 presents the data on the Wealth level as perceived by trainee teachers considered as a whole and classified according to team-based learning, connectedness, and gratification. The computation yielded a grand mean of 3.036, indicating no significant differences in team-based learning, connectedness, and gratification considered as a whole and classified according to wealth level.

The study's findings suggest that Wealth level did not significantly influence team-based learning, connectedness, and gratification among trainee teachers in the blended learning modality. Therefore, the researchers did not find any evidence to support the notion that these factors vary based on the socioeconomic backgrounds of the participants.

These findings are consistent with the belief that online learning is accessible and can reach remote and rural areas more quickly than offline teaching (Business Standard, 2021). However, these results contradict the study of Jain (2020), which supports that “the accessibility and affordability of online teaching depend on the socio-economic conditions of students' households.”

Therefore, the hypothesis is supported, which states that there is no significant difference in team-based learning, connectedness, and gratification as perceived by the trainee teachers according to wealth level.

Table 7 shows the data.

Table 7. *Differences in Team-based Learning, Connectedness, and Gratification when Classified According to Wealth level*

Categories	Mean	SD	df	t	p	ETA Square
Team-based Learning						
Affluent	3.06	0.30				
Average earners	3.26	0.45	165	1.99	.140	0.0238
Economically challenged	3.11	0.36				
Connectedness						
Affluent	3.06	0.30				
Average earners	3.26	0.45	165	.270	.764	0.0033
Economically challenged	3.11	0.36				
Gratification						
Affluent	2.75	0.25				
Average earners	3.00	0.26	165	1.27	.282	0.0153
Economically challenged	3.00	0.27				

*p-value less than 0.05, indicating statistical significance at the 0.05 alpha level

This study assessed team-based learning, connectedness, and gratification among trainee teachers in a blended learning setting. Specifically, the study sought to answer questions regarding the extent of team-based learning, connectedness, and gratification among trainee teachers across various demographics. The findings revealed high levels of team-based learning and connectedness and high gratification levels among trainee teachers regardless of gender, educational stage, domicile, and wealth level.

While no significant differences were observed between male and female trainee teachers regarding team-based learning, connectedness, and gratification, there was a notable difference in team-based learning based on educational stage. This suggests a progression in team-based learning skills over the academic years.

Furthermore, no significant differences were based on domicile or wealth level, indicating a consistent educational experience for trainee teachers regardless of geographical or socio-economic background. These findings emphasize the importance of fostering inclusive educational practices to ensure equal opportunities and support for all students.

Conclusions

The study reveals that trainee teachers perceive team-based learning, connectedness, and gratification positively, regardless of demographic variables. However, differences in team-based learning skills across academic years suggest a developmental progression. Team-based learning skills improve with experience and targeted educational strategies (Swanson et al., 2019). Therefore, targeted interventions are needed to enhance team-based learning skills for effective collaboration in future teaching roles. Practical implications of these results include the implementation of mentorship programs, additional resources, or tailored instruction to address specific needs at different academic stages.

Maintaining positive learning environments that foster connectedness and gratification is crucial. Despite variations in team-based learning skills, high levels of connectedness and gratification demonstrate the positive impact of the educational experience on pre-service teachers. This underscores the importance of educational institutions in creating supportive and inclusive environments conducive to learning and personal development.

Moreover, an inclusive educational setting catering to diverse needs is essential. The study highlights the necessity for interventions that support students at different academic stages, which may include additional resources, mentorship programs, or tailored instruction to address specific needs. These targeted interventions can ensure that all trainee teachers, regardless of their academic year, have the opportunity to develop the skills needed for effective teamwork and professional success.

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