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Teacher Support and Student Engagement in the Conduct of Blended Learning Instruction for English as A Foreign Language

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Abstract: With the deep integration of information technology and education, blended learning has emerged as a new paradigm in higher education, combining the strengths of both online and offline learning environments. This approach allows English as Foreign Language (EFL) learners, particularly in the Chinese context, to engage in flexible and continuous learning beyond traditional classroom settings, thereby fostering greater student initiative and self-directed learning. Understanding the impact of teacher support on student engagement within this blended learning framework is crucial for optimizing educational outcomes. This study employed a quantitative descriptive comparative and correlational research design to examine the relationship between various forms of teacher support—instructional, emotional, feedback, and interpersonal—and student engagement among 307 Chinese EFL learners in a blended learning environment. The findings reveal that all forms of teacher support were perceived as high, with feedback provision ranking highest. Similarly, student engagement was also rated highly across behavioral, cognitive, emotional, and social domains. The Pearson correlation coefficient between teacher support and student engagement was found to be 0.75, indicating a significant positive relationship. Based on these findings, a program aimed at enhancing teacher support to further improve student engagement in blended learning environments was developed and recommended.

Keywords: Blended Learning; Teacher Support; Student Engagement; EFL Learners; Higher Education.

1. Introduction

The rapid development of computer and information technology has promoted the integration between face-to-face learning with online learning in a large extend. Especially during the pandemic of Covid-19, millions of students at home and abroad attended the online class to continue their study, which promoted the integration of face-to-face classes and online classes. Horizon Report (2021) published by EDUCAUSE also emphasized again that blended learning is the future tend of higher education development. Blended learning combined the advantages of both online learning and face-to-face learning, which can provide more diversified choices for EFL learners to improve the autonomously learning. The quality of higher education and teaching has always been the key issue in the field of academic research and exploration, and students' learning engagement is one of the key criteria to measure the level of teaching quality in higher education. Manwaring (2017) pointed out that the changing of learning engagement will significantly change the results of learning experience and learning outcomes under the blended learning environment. Teachers are the most important interactive subjects to solve the problems of negative learning attitude and low- class participation in college English learning classes under blended learning environment. However, the relationship of teacher support on EFL learners' engagement are manly studied in the environment of face-to-face and online classes with a few theses researched that under blended learning environment. This thesis wants to research and find the relationship between teacher support with four dimension and student engagement of four dimension by surveying 307 college students who have English classes during blended learning construction. And then give some recommendations to enhance multidimensional teacher support, implement inclusive teaching strategies, promote student-centered learning environment as well as integrate technology to support engagement and provide professional development for teachers.

2. Literature Review and Research Hypothesis

Although facing many challenges, blended learning instruction can bring lots of advantages especially for English as foreign language learners, therefore there are abundant researches at home and abroad. Kumar (2021) pointed out that blended learning can significantly reduce the classroom crowed presence and can help students learn meaningfully and autonomously. Dakhi (2020) noted that under the blended learning environment, teachers can achieve their teaching goal more successfully, and within this environment, EFL learners can also develop and practice English language skills without the limitation of the place, as long as they have an Internet connection and they can repeat the lessons freely. His study proved that students can learn efficiently and autonomously under the blended learning environment. Sari (2019) pointed out that students in Indonesia use the most popular social network sites of Instagram to study English, and teachers can improve the language learning under the blended learning environment, especially for EFL learner at the tertiary level. Notably, the research found out that most EFL students showed high positive perceptions in using Instagram in their learning since blended learning influenced their motivation, engagement, and attitudes. Anthonysamy el

at. (2020) noted that many research found out that many students have difficulties under the environment of digital learning environment, because of lacking the self-regulated learning strategy to help them learn efficiently. Though, the research attempts to and explore the relationship between teacher support and student engagement under blended instruction. Liu el at. (2023) pointed out that although they are many researches on teacher support, but the studies on EFL Teacher support is still in the initial stage. Sadoughi & Hejazi (2022) noted that teacher support is an important type of social support, and it can significantly help learner to get more achievements during second language learning process. And based on research needs, the teacher support can be considered as a single-dimensional variable or a multi-dimensional variable. Lazarides (2019) and Ansong (2017) and other studies regard teacher support as a multi-dimensional variable with relationships adjusted for age, gender, and culture. Wentzel et al. (2017) pointed out that teacher support should be divided into the following aspects: teachers' expectation of students' academic help, teachers' academic help, and teachers' emotional support. Xerri et al. (2018) pointed out that many empirical studies show that there is a positive relationship between learning engagement and learning outcomes, and learning engagement is a necessary prerequisite for improving students' academic achievement and educational quality. Dixson (2015) had pointed out the student engagement was a four-dimensional structure including skill engagement, emotional engagement, practice or interaction engagement and performance engagement under the online learning engagement. Mercer (2019) noted that Second Language Acquisition researchers had paid more and more attention to the learning engagement because of its' playing a significant role in improving learning achievement. Smith and Jones (2020) conducted a meta-analysis to provide a comprehensive understanding of the overall influence of teacher support on student engagement. Chen & Wang (2021) pointed out that his study explored the relationship between teacher support and student engagement in secondary education, and fund a positive correlation between them. Through combing the literature, we found that most of the research of teacher support and student engagement are mainly under the traditional face-to-face learning environment, followed is under the online learning environment, however, there haven't been much research of the relationship between teacher support and student engagement under blended learning instruction. The relationship between Teacher support on Chinese English as a Foreign Language (EFL) and student engagement within a blended learning environment is a multifaceted phenomenon that requires comprehensive investigation. Understanding how various forms of support provided by teachers influence student engagement in the context of blended learning is essential for optimizing learning outcomes and enhancing the educational experience of Chinese EFL learners. Therefore, this study proposes the following hypotheses:

H01: There is no significant difference in respondent assessment on Teacher Support when their profiles are taken as test factors

H02: There is no significant difference in respondent assessment on Student Engagement when their profiles are taken as test factors

H03: There is no significant relationship between the level of Teacher Support and Student Engagement within the blended learning environment for Chinese English as Foreign Language (EFL) students?

To summarize, this study constructs a conceptual framework to present the relationship between teacher support and student engagement within blended learning instruction, as showed in Figure 1.

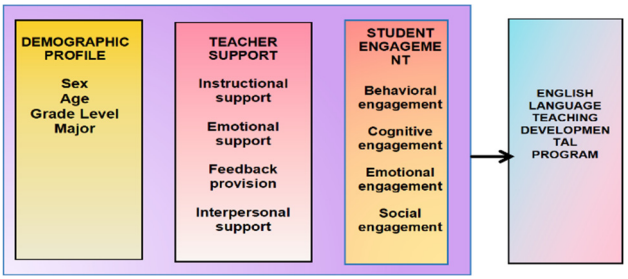


Figure 1. Conceptual framework of the relationship between teacher support and student engagement

3. Methodology

3.1. Research Design

In this study, a quantitative descriptive comparative and correlational research design was employed to investigate the relationship between teacher support and student engagement in the context of Chinese English as Foreign Language (CEFL) learning within a blended learning environment. The selection of a quantitative design was informed by the need to capture the complexity and nuances of the relationship between teacher support and student engagement. By integrating the survey and interview methods, the study aimed to not only quantify the extent of teacher support and student engagement but also explore the underlying mechanisms, perceptions, and experiences that shape this relationship. Quantitative questionnaires were utilized to collect numerical data on various aspects of teacher support and student engagement. These quantitative measures allowed for the systematic assessment of teacher support and student engagement across multiple dimensions, providing quantitative indicators of the variables under investigation.

3.2. Research Samples

College students who have the experience of learning English in blended learning environment from Hunan Institute of Science and Technology and its independent college, Nanhu College, located in Yue yang City were investigated by answering a online questionnaire survey. A simple random sampling method was employed, giving every student in the selected universities an equal chance of being included in the study. With the targeted students of 1742 from various majors, by using the Raosoft sample size calculator with a 5% margin of error, 95% confidence level, and 50% response distribution to determine a sample size of 307. And all of the respondents have given the valid response, which comprise 152 (49.51%) boys,155 (50.49%)girls,129 (42.02%)19 years old and below,178 (57.98%) 20 years old and above, 104(33.88%) juniors,102 (33.22%) freshmen,54 (17.59%)seniors, 47 (15.31%) sophomores,114 (37.13%) Science and Technology, 95 (30.94%) Literature and History, 57(18.57%)Arts and Sports, 41 respondents (13.36%) 'Others'.

3.3. Research Instrument

The research instruments used in this study consisted of three distinct parts, each designed to gather specific data relevant to understanding the relationship between teacher support and student engagement within a blended learning

environment.

Part 1: Demographic Profile

This section included questions designed to capture key background characteristics of the students, such as age, gender, academic year, major, and English language proficiency level. The demographic profile data provided a context for analyzing the relationships between teacher support and student engagement across different student groups.

Part 2: Researcher-Made Instrument for Teacher Support

The second part of the research instrument was a researcher-made survey designed to assess students' perceptions of teacher support in the blended learning environment. This survey included items that measured various dimensions of teacher support, such as instructional support, emotional support, feedback provision, and interpersonal support. The questions were structured using a Likert scale, allowing students to rate the extent to which they experienced these forms of support from their teachers. This instrument was developed based on a thorough review of existing literature and tailored to the specific context of Chinese EFL learners in a blended learning setting.

Part 3: Researcher-Made Instrument for Student Engagement

The third part of the research instrument was another researcher-made survey aimed at measuring student engagement within the blended learning environment. This survey included items that assessed different aspects of engagement, such as behavioral engagement (e.g., participation in online discussions, completion of assignments), cognitive engagement (e.g., applying learning strategies, critical thinking), emotional engagement (e.g., motivation, interest in learning), and social engagement (e.g., collaboration with peers). Like the teacher support survey, this instrument used a Likert scale for responses, allowing for a quantitative assessment of student engagement levels.

Together, these three parts of the research instrument provided comprehensive data to explore the relationship between teacher support and student engagement, contributing to a deeper understanding of how these factors interact in a blended learning environment.

3.4. Statistical Treatment of the Data

For ease of the analysis of the data gathered, the researcher employed the following statistical tools and treatments for the analysis of the data:

Frequency Count and Percentage. Frequency counts and percentages are utilized to analyze categorical data obtained from questionnaire surveys. This analysis allows researchers to determine the frequency of responses for each item or category within the survey instruments.

Weighted Mean. Weighted mean is employed to calculate the average score for each item in the questionnaire, taking into account the importance or weighting assigned to each item by participants. This analysis provides a comprehensive understanding of participants' perceptions and attitudes towards different aspects of teacher support and student engagement within the blended learning environment.

Standard Deviation. Standard deviation is computed to measure the variability or dispersion of scores within a dataset. This statistical measure indicates the degree of spread of data points around the mean.

Likert Scale. Likert scale analysis involves aggregating responses from Likert-type items to assess participants' attitudes, opinions, or perceptions. Responses are typically coded on a numerical scale, allowing for quantitative analysis of qualitative data.

Table 1. Likert Scale

Scale	Impact of teacher support on student engagement	Perception
3.51-4.00	Strongly agree	Very high
2.51-3.50	Agree	High
1.51-2.50	Disagree	Low
1.00-1.50	Strongly disagree	Very low

t-test. The t-test is employed to compare the means of two independent groups and determine whether there is a statistically significant difference between them. In the context of this study, the t-test may be used to compare the mean scores of teacher support dimensions, student engagement levels, or self-efficacy beliefs between different groups of participants (e.g., teachers vs. students, high-engagement vs. low-engagement students).

3.5. Results and Discussion

This section systematically analyzes the data collected through structured questionnaires, providing insights into the various dimensions of teacher support—such as instructional, emotional, feedback, and interpersonal support—and their impact on student engagement.

Table 2. Assessment of Teacher Support

Domains	Mean	SD	Verbal Description/ Interpretation	Rank
Instructional Support	3.18	0.81	High	4
Emotional Support	3.21	0.81	High	2
Feedback Provision	3.24	0.80	High	1
Interpersonal Support	3.19	0.79	High	3
Teacher Support	3.21	0.60	High	-

Scale: 1-1.50: Very Low; 1.51-2.50: Low; 2.51-3.50: High; 3.51-4.00: Very High

Table 2 presents that the domain of Feedback Provision ranks the highest with a mean score of 3.24 and a standard deviation of 0.80, suggesting that students place significant value on the feedback they receive from their teachers. Following is the Emotional Support with a mean score of 3.21 and a standard deviation of 0.81, reflects the importance students attribute to the emotional aspect of teacher support, emphasizing how teachers' encouragement and the provision of a safe learning environment contribute to their academic and personal well-being. And then is the Interpersonal

Support with a mean score of 3.19 and a standard deviation of 0.79, suggesting that while students appreciate the interpersonal interactions and relationships fostered by their teachers, they may perceive it as slightly less impactful than emotional support and feedback provision. Finally, is the Instructional Support with a mean score of 3.18 and a standard deviation of 0.81. This indicates that while students recognize and value the instructional strategies and methods used by their teachers, it may be perceived as slightly less influential compared to the other domains.

Overall, the composite score for teacher support is a mean of 3.21 with a standard deviation of 0.60, which is interpreted as high. This summary underscores that students feel well-supported across all domains of teacher support, with feedback provision and emotional support being slightly more emphasized as critical factors in their educational experience. The high overall rating indicates a strong and positive perception of teacher support, contributing to a supportive and effective learning environment. This comprehensive support is crucial, as highlighted by Chen & Wang (2021), who noted that consistent and multidimensional teacher support is vital for sustained student engagement and success over time.

Table 3. Differences in Teacher Support based on Sex

Domains	Categories	Mean	t- value	sig.	Interpretation/ Decision
Instructional Support	Male	3.22	0.72	0.47	Not significant/ Accept H_0
	Female	3.15			
Emotional Support	Male	3.20	-0.07	0.95	Not significant/ Accept H_0
	Female	3.21			
Feedback Provision	Male	3.25	0.28	0.78	Not significant/ Accept H_0
	Female	3.23			
Interpersonal Support	Male	3.18	-0.17	0.86	Not significant/ Accept H_0
	Female	3.20			
Teacher Support	Male	3.21	0.26	0.80	Not significant/ Accept H_0
	Female	3.20			

**Level of significance = 0.05*

Table 3 examines the differences in perceived teacher support based on the sex of the respondents across the four domains: Instructional Support, Emotional Support, Feedback Provision, and Interpersonal Support. The table presents the mean scores for male and female respondents, along with the t-value, significance level (sig.), and the interpretation or decision regarding the null hypothesis (H0). The overall Teacher Support mean score is 3.21 for male respondents and 3.20 for female respondents. The t-value is 0.26 with a significance level of 0.80. The p-value is greater than 0.05, leading to the acceptance of the null hypothesis (H0). This indicates that there is no significant difference in the overall perception of teacher support between male and female students. Table 2 demonstrates that there are no significant differences in teacher support across the domains based on the sex of the respondents. Both male and female students perceive the support from their teachers similarly across all domains. This suggests that both male and female students perceive teacher support similarly, which is important as noted by Liu el at. (2023) who explored gender differences in perceived teacher support and found that while male students might perceive higher emotional support, overall support strategies should be inclusive and equitable.

Table 4. Differences in Teacher Support based on Age

Domains	Categories	Mean	t- value	sig.	Interpretation/ Decision
Instructional Support	19 years old and below	3.17	-0.18	0.86	Not significant/ Accept H_0
	20 years old and above	3.19			
Emotional Support	19 years old and below	3.21	0.16	0.87	Not significant/ Accept H_0
	20 years old and above	3.20			
Feedback Provision	19 years old and below	3.23	-0.12	0.90	Not significant/ Accept H_0
	20 years old and above	3.25			
Interpersonal Support	19 years old and below	3.18	-0.22	0.83	Not significant/ Accept H_0
	20 years old and above	3.20			
Teacher Support	19 years old and below	3.20	-0.12	0.90	Not significant/ Accept H_0
	20 years old and above	3.21			

**Level of significance = 0.05*

Table 4 explores the differences in perceived teacher support based on the age of the respondents across the four domains: Instructional Support, Emotional Support, Feedback Provision, and Interpersonal Support. The overall Teacher Support mean score is 3.20 for respondents aged 19 years old and below and 3.21 for those aged 20 years old and above. The t-value is -0.12 with a significance level of 0.90. The p-value is greater than 0.05, leading to the acceptance of the null hypothesis (H0). This demonstrates that there are no significant differences in teacher support across the domains based on the age of the respondents. Both younger (19 years old and below) and older students (20 years old and above) perceive the support from their teachers similarly across all domains. The lack of significant differences aligns with findings from studies like those of Tao et al. (2022), which suggest that teacher support positively influences student

engagement across various age groups, emphasizing the importance of consistent support regardless of student age.

Table 5. Differences in Teacher Support based on Grade

Domains	Categories	Mean	F- value	sig.	Interpretation/ Decision
Instructional Support	First	3.19	0.01	1.00	Not significant/ Accept H_0
	Second	3.16			
	Third	3.18			
	Fourth	3.18			
Emotional Support	First	3.24	0.21	0.89	Not significant/ Accept H_0
	Second	3.12			
	Third	3.21			
	Fourth	3.22			
Feedback Provision	First	3.20	0.43	0.86	Not significant/ Accept H_0
	Second	3.27			
	Third	3.30			
	Fourth	3.17			
Interpersonal Support	First	3.18	0.86	0.46	Not significant/ Accept H_0
	Second	3.04			
	Third	3.24			
	Fourth	3.26			
Teacher Support	First	3.20	0.21	0.89	Not significant/ Accept H_0
	Second	3.15			
	Third	3.23			
	Fourth	3.21			

**Level of significance = 0.05*

Table 5 presents the differences in perceived teacher support based on the grade level of the respondents across the four domains: Instructional Support, Emotional Support, Feedback Provision, and Interpersonal Support. The overall Teacher Support mean scores are 3.20 for First-year students, 3.15 for Second-year students, 3.23 for Third-year students, and 3.21 for Fourth-year students. The F-value is 0.21 with a significance level of 0.89. The p-value is greater than 0.05, leading to the acceptance of the null hypothesis (H0). This demonstrates that there are no significant differences in teacher support across the domains based on the grade level of the respondents. Students from different academic years (First, Second, Third, and Fourth) perceive the support from their teachers similarly across all domains. This supports the argument by Pan & Yao (2023) that teacher support remains a critical factor for student engagement across all academic levels, underscoring its universal importance in education.

Table 6. Differences in Teacher Support based on Major

Domains	Categories	Mean	F- value	sig.	Interpretation/ Decision
Instructional Support	Literature and History	3.19	0.12	0.95	Not significant/ Accept H_0
	Science and Technology	3.19			
	Arts and Sports	3.13			
	Others	3.23			
Emotional Support	Literature and History	3.16	0.19	0.91	Not significant/ Accept H_0
	Science and Technology	3.22			
	Arts and Sports	3.23			
	Others	3.25			
Feedback Provision	Literature and History	3.27	0.23	0.87	Not significant/ Accept H_0
	Science and Technology	3.20			
	Arts and Sports	3.30			
	Others	3.22			
Interpersonal Support	Literature and History	3.14	1.24	0.29	Not significant/ Accept H_0
	Science and Technology	3.30			
	Arts and Sports	3.17			
	Others	3.06			
Teacher Support	Literature and History	3.19	0.08	0.97	Not significant/ Accept H_0
	Science and Technology	3.22			
	Arts and Sports	3.21			
	Others	3.19			

**Level of significance = 0.05*

Table 6 examines the differences in perceived teacher support based on the major of the respondents across the four

domains: Instructional Support, Emotional Support, Feedback Provision, and Interpersonal Support. The overall Teacher Support mean scores are 3.19 for Literature and History, 3.22 for Science and Technology, 3.21 for Arts and Sports, and 3.19 for Others. The F-value is 0.08 with a significance level of 0.97. The p-value is greater than 0.05, leading to the acceptance of the null hypothesis (H0). This demonstrates that there are no significant differences in teacher support across the domains based on the major of the respondents. Students from different academic majors (Literature and History, Science and Technology, Arts and Sports, and Others) perceive the support from their teachers similarly across all domains. This finding aligns with the literature, particularly the work of Patel & Smith (2020), which suggests that effective teacher support strategies are universally applicable across different academic disciplines, ensuring that all students benefit regardless of their field of study.

Table 7. Assessment of Student Engagement

Domains	Mean	SD	Verbal Description/ Interpretation	Rank
Behavioral Engagement	3.16	0.84	High	4
Cognitive Engagement	3.18	0.81	High	2
Emotional Engagement	3.18	0.84	High	2
Social Engagement	3.18	0.81	High	2
Student Engagement	3.17	0.63	High	-

Scale: 1-1.50: Very Low; 1.51-2.50: Low; 2.51-3.50: High; 3.51-4.00: Very High

Table 7 presents a summary of overall student engagement, categorized into four key domains: Behavioral Engagement, Cognitive Engagement, Emotional Engagement, and Social Engagement. The domains of Cognitive Engagement, Emotional Engagement, and Social Engagement are tied for the highest rank, each with a mean score of 3.18. The standard deviations for these domains are 0.81 for Cognitive and Social Engagement, and 0.84 for Emotional Engagement. This suggests that students perceive themselves as equally engaged across these three domains, indicating a well-rounded engagement profile that includes intellectual involvement, emotional investment, and social participation in their learning.

Behavioral Engagement, while still rated highly, ranks fourth with a mean score of 3.16 and a standard deviation of 0.84. This indicates that students perceive their behavioral engagement—such as participation in class activities, perseverance, and attentiveness—slightly lower than the other domains. However, the difference is minimal, reflecting a generally consistent level of engagement across all domains.

Overall, the composite score for Student Engagement is a mean of 3.17 with a standard deviation of 0.63, which is interpreted as high. This summary indicates that students generally perceive themselves as highly engaged in their learning across all domains, with cognitive, emotional, and social engagement being particularly prominent. The high overall rating underscores a strong and positive level of engagement among students in their academic pursuits. The equally high scores across cognitive, emotional, and social engagement reflect the multidimensional nature of student engagement as described by Fredricks et al. (2004), who identified these dimensions as critical to understanding and enhancing student engagement.

Table 8. Differences in Student Engagement based on Sex

Domains	Categories	Mean	t- value	sig.	Interpretation/ Decision
Behavioral Engagement	Male	3.20	0.83	0.40	Not significant/ Accept H_0
	Female	3.12			
Cognitive Engagement	Male	3.24	1.29	0.20	Not significant/ Accept H_0
	Female	3.12			
Emotional Engagement	Male	3.24	1.19	0.24	Not significant/ Accept H_0
	Female	3.12			
Social Engagement	Male	3.24	1.36	0.18	Not significant/ Accept H_0
	Female	3.12			
Student Engagement	Male	3.23	1.54	1.13	Not significant/ Accept H_0
	Female	3.12			

**Level of significance = 0.05*

Table 8 examines the differences in student engagement based on the sex of the respondents across the four domains: Behavioral Engagement, Cognitive Engagement, Emotional Engagement, and Social Engagement. The overall Student Engagement mean score is 3.23 for male respondents and 3.12 for female respondents. The t-value is 1.54 with a significance level of 1.13. The p-value is greater than 0.05, leading to the acceptance of the null hypothesis (H0). Table 7 demonstrates that there are no significant differences in student engagement across the domains based on the sex of the respondents. Both male and female students perceive their engagement in learning similarly across all domains. This supports the findings of Liu el at. (2023) that while there might be slight variations in how male and female students perceive support, their overall engagement levels are similarly influenced by effective teacher support.

Table 9. Differences in Student Engagement based on Age

Domains	Categories	Mean	t- value	sig.	Interpretation/ Decision
Behavioral Engagement	19 years old and below	3.13	-0.45	0.65	Not significant/ Accept H_0
	20 years old and above	3.18			
Cognitive Engagement	19 years old and below	3.15	-0.63	0.53	Not significant/ Accept H_0
	20 years old and above	3.21			
Emotional Engagement	19 years old and below	3.15	-0.52	0.61	Not significant/ Accept H_0
	20 years old and above	3.20			
Social Engagement	19 years old and below	3.16	-0.41	0.68	Not significant/ Accept H_0
	20 years old and above	3.19			
Student Engagement	19 years old and below	3.15	-0.66	0.51	Not significant/ Accept H_0
	20 years old and above	3.19			

**Level of significance = 0.05*

Table 9 explores the differences in student engagement based on the age of the respondents across the four domains: Behavioral Engagement, Cognitive Engagement, Emotional Engagement, and Social Engagement. The overall Student Engagement mean score is 3.15 for respondents aged 19 years old and below and 3.19 for those aged 20 years old and above. The t-value is -0.66 with a significance level of 0.51. The p-value is greater than 0.05, leading to the acceptance of the null hypothesis (H0). Table 8 demonstrates that there are no significant differences in student engagement across the domains based on the age of the respondents. Both younger (19 years old and below) and older students (20 years old and above) perceive their engagement in learning similarly across all domains. This aligns with studies like those of An et al. (2022), which found that teacher support impacts student engagement across all age groups, underscoring the universal importance of supportive teaching practices.

Table 10. Differences in Student Engagement based on Grade

Domains	Categories	Mean	F- value	sig.	Interpretation/ Decision
Behavioral Engagement	First	3.06	1.53	0.21	Not significant/ Accept H_0
	Second	3.38			
	Third	3.14			
	Fourth	3.18			
Cognitive Engagement	First	3.18	0.50	0.69	Not significant/ Accept H_0
	Second	3.06			
	Third	3.23			
	Fourth	3.20			
Emotional Engagement	First	3.11	1.88	0.13	Not significant/ Accept H_0
	Second	3.32			
	Third	3.09			
	Fourth	3.36			
Social Engagement	First	3.19	0.07	0.97	Not significant/ Accept H_0
	Second	3.14			
	Third	3.19			
	Fourth	3.16			
Student Engagement	First	3.14	0.33	0.81	Not significant/ Accept H_0
	Second	3.22			
	Third	3.16			
	Fourth	3.22			

**Level of significance = 0.05*

Table 10 examines the differences in student engagement based on the grade level of the respondents across the four domains: Behavioral Engagement, Cognitive Engagement, Emotional Engagement, and Social Engagement. The overall Student Engagement mean scores are 3.14 for First-year students, 3.22 for Second-year students, 3.16 for Third-year students, and 3.22 for Fourth-year students. The F-value is 0.33 with a significance level of 0.81. The p-value is greater than 0.05, leading to the acceptance of the null hypothesis (H0). This demonstrates that there are no significant differences in student engagement across the domains based on the grade level of the respondents. Students from different academic years (First, Second, Third, and Fourth) perceive their engagement in learning similarly across all domains. This suggests that students from different academic years are equally engaged, supporting the argument by Adams & Martinez (2020) that teacher support remains critical across different educational stages.

Table 11 explores the differences in student engagement based on the major of the respondents across the four domains: Behavioral Engagement, Cognitive Engagement, Emotional Engagement, and Social Engagement. The overall Student Engagement mean scores are 3.09 for Literature and History, 3.23 for Science and Technology, 3.20 for Arts and Sports, and 3.18 for Others. The F-value is 0.99 with a significance level of 0.40. The p-value is greater than 0.05, leading to the

acceptance of the null hypothesis (H0). This demonstrates that there are no significant differences in student engagement across the domains based on the major of the respondents. Students from different academic majors (Literature and History, Science and Technology, Arts and Sports, and Others) perceive their engagement in learning similarly across all domains. This supports the findings of Patel & Smith (2020), who highlighted that effective teacher support strategies transcend disciplinary boundaries, benefiting students across all fields.

Table 11. Differences in Student Engagement based on Major

Domains	Categories	Mean	F- value	sig.	Interpretation/ Decision
Behavioral Engagement	Literature and History	3.03	1.74	0.16	Not significant/ Accept H_0
	Science and Technology	3.29			
	Arts and Sports	3.13			
	Others	3.13			
Cognitive Engagement	Literature and History	3.21	0.06	0.98	Not significant/ Accept H_0
	Science and Technology	3.17			
	Arts and Sports	3.17			
	Others	3.17			
Emotional Engagement	Literature and History	3.04	1.47	0.22	Not significant/ Accept H_0
	Science and Technology	3.25			
	Arts and Sports	3.28			
	Others	3.17			
Social Engagement	Literature and History	3.07	0.84	0.47	Not significant/ Accept H_0
	Science and Technology	3.22			
	Arts and Sports	3.23			
	Others	3.23			
Student Engagement	Literature and History	3.09	0.99	0.40	Not significant/ Accept H_0
	Science and Technology	3.23			
	Arts and Sports	3.20			
	Others	3.18			

**Level of significance = 0.05*

Table 12. Relationship between Teacher Support and Student Engagement

		Instructional Support	Emotional Support	Feedback Provision	Interpersonal Support	Teacher Support
Behavioral Engagement	Pearson r	0.44	0.41	0.44	0.40	0.57
	Sig.	0.00	0.00	0.00	0.00	0.00
Cognitive Engagement	Pearson r	0.45	0.50	0.40	0.39	0.58
	Sig.	0.00	0.00	0.00	0.00	0.00
Emotional Engagement	Pearson r	0.44	0.46	0.37	0.36	0.55
	Sig.	0.00	0.00	0.00	0.00	0.00
Social Engagement	Pearson r	0.47	0.46	0.39	0.36	0.56
	Sig.	0.00	0.00	0.00	0.00	0.00
Student Engagement	Pearson r	0.60	0.60	0.53	0.50	0.75
	Sig.	0.00	0.00	0.00	0.00	0.00

**Level of significance = 0.05*

Table 12 explores the relationship between different dimensions of teacher support—Instructional Support, Emotional Support, Feedback Provision, Interpersonal Support, and the overall Teacher Support—and various aspects of student engagement, including Behavioral Engagement, Cognitive Engagement, Emotional Engagement, Social Engagement, and overall Student Engagement.

Starting with Behavioral Engagement, the results indicate a moderate positive correlation with all dimensions of teacher support. Specifically, the Pearson correlation coefficients are 0.44 for Instructional Support, 0.41 for Emotional Support, 0.44 for Feedback Provision, and 0.40 for Interpersonal Support, with all correlations being statistically significant (Sig. = 0.00). Overall, Teacher Support has the strongest correlation with Behavioral Engagement, at 0.57, suggesting that students' behaviors, such as participation and perseverance, are more positively influenced when they perceive higher levels of overall support from their teachers.

Cognitive Engagement also shows moderate positive correlations with the dimensions of teacher support. The Pearson correlation coefficients are 0.45 for Instructional Support, 0.50 for Emotional Support, 0.40 for Feedback Provision, and 0.39 for Interpersonal Support, all significant at the 0.00 level. Overall, Teacher Support has a stronger relationship with Cognitive Engagement, indicated by a correlation coefficient of 0.58. This suggests that students' cognitive involvement—such as critical thinking and the application of learning strategies—is more robust when they perceive greater emotional and overall support from their teachers.

In terms of Emotional Engagement, there are also moderate positive correlations with the different types of teacher support. The correlations are 0.44 for Instructional Support, 0.46 for Emotional Support, 0.37 for Feedback Provision, and 0.36 for Interpersonal Support, with all being statistically significant (Sig. = 0.00). Overall, Teacher Support has the

strongest correlation with Emotional Engagement at 0.55. This indicates that students' emotional investment in their learning is more likely to be enhanced by comprehensive support from their teachers, particularly when this support is perceived as holistic and encompassing.

For Social Engagement, the correlations are slightly higher for Instructional Support (r = 0.47) and Emotional Support (r = 0.46) compared to the other dimensions. Feedback Provision and Interpersonal Support have slightly lower correlations at 0.39 and 0.36, respectively. However, the overall Teacher Support again demonstrates a strong positive relationship with Social Engagement, with a correlation coefficient of 0.56. These findings suggest that students' social interactions and sense of belonging in the learning environment are strongly influenced by the level of instructional and overall support they perceive from their teachers.

Finally, when considering overall Student Engagement, the correlations with teacher support are notably strong. Instructional Support and Emotional Support both have correlation coefficients of 0.60, while Feedback Provision and Interpersonal Support are slightly lower at 0.53 and 0.50, respectively. Overall, Teacher Support stands out with a correlation coefficient of 0.75, indicating a very strong positive relationship. This highlights the crucial role that comprehensive teacher support plays in fostering high levels of engagement across all domains—behavioral, cognitive, emotional, and social—among students.

In summary, the data presented in Table 20 underscores the importance of teacher support in enhancing various forms of student engagement. Overall, Teacher Support, in particular, emerges as a critical factor in influencing how engaged students are in their learning, affecting their behaviors, cognitive processes, emotional investment, and social interactions within the educational environment. The significance of all these relationships (Sig. = 0.00) further affirms the pivotal role of teacher support in fostering a conducive and engaging learning atmosphere. The strongest correlation is between overall Teacher Support and Student Engagement (r = 0.75), reinforcing the findings of Chen & Wang (2021) and Smith & Jones (2020), who emphasized that comprehensive teacher support is vital for fostering high levels of student engagement. This strong relationship underscores the importance of teacher support as a key factor in enhancing educational outcomes in blended learning environments.

4. Conclusion

The study aimed to explore the relationship between teacher support and student engagement within a blended learning environment, examining various demographic factors such as age, sex, grade level, and academic major. The findings underscore the critical role that comprehensive teacher support plays in fostering student engagement across different domains—behavioral, cognitive, emotional, and social.

Throughout the analysis, it became evident that students consistently perceived high levels of support from their teachers, regardless of their demographic background or academic major. This finding suggests that effective teacher support strategies are universally applicable and beneficial, providing a strong foundation for student engagement across diverse student populations. The strong positive correlations between teacher support and various forms of student engagement reinforce the notion that when students feel supported—emotionally, intellectually, and socially—they are more likely to engage deeply with their learning.

Moreover, the study found no significant differences in the levels of student engagement based on sex, age, grade level, or academic major, further emphasizing the broad applicability and importance of teacher support in promoting engagement. This suggests that educators should prioritize creating supportive learning environments that cater to the diverse needs of students, as such environments are crucial for maximizing student engagement and, consequently, educational outcomes.

In conclusion, this study highlights the indispensable role of teacher support in enhancing student engagement within blended learning environments. By providing consistent and multidimensional support, teachers can significantly influence students' behavioral, cognitive, emotional, and social engagement, leading to improved learning experiences and outcomes. These findings contribute to the growing body of literature advocating for the strategic integration of teacher support in educational practices, particularly in the increasingly prevalent blended learning contexts. Educators, administrators, and policymakers should consider these insights when designing and implementing instructional strategies to ensure that all students are fully engaged and supported in their educational journeys.

5. Recommendations

Based on the findings of this study, the following five general recommendations are proposed:

1. Enhance Multidimensional Teacher Support: Educators should focus on providing comprehensive support that addresses the emotional, cognitive, behavioral, and social needs of students. This includes offering timely and constructive feedback, fostering a supportive and inclusive classroom environment, and providing resources that cater to different learning styles. Such multidimensional support can significantly enhance student engagement across all domains.

2. Implement Inclusive Teaching Strategies: Given that no significant differences were found in engagement based on sex, age, grade level, or academic major, educators should implement teaching strategies that are inclusive and effective for all students. This includes adopting flexible instructional methods that can be adapted to meet the needs of diverse student populations, ensuring that all students feel equally supported and engaged.

3. Promote Student-Centered Learning Environments: Educators should create learning environments that encourage active participation, collaboration, and autonomy among students. By promoting student-centered approaches, such as blended learning and flipped classrooms, teachers can foster deeper engagement and a stronger sense of ownership over the learning process.

4. Provide Professional Development for Teachers: Schools and educational institutions should offer ongoing professional development opportunities for teachers to enhance their skills in providing effective support to students. Training should focus on strategies for emotional support, feedback provision, and fostering student engagement in both traditional and blended learning environments.

5. Integrate Technology to Support Engagement: In blended learning environments, it is crucial to leverage technology effectively to support student engagement. Educators should be trained in using digital tools and

platforms that facilitate interactive learning, provide instant feedback, and enable students to connect with their peers. Ensuring that technology is used in a way that enhances, rather than hinders, engagement is essential for the success of blended learning models.

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