

**| RESEARCH ARTICLE****Students' Engagement Levels in Traditional and Blended Learning Environments: A Comparative Analysis****Jenylen Cabiso<sup>1</sup>, Eldino Dinoy<sup>2</sup>, Mariz Yagong<sup>3</sup>, Jordan agong<sup>4</sup>, Erica Dico<sup>5</sup>, Marilou Inoc<sup>6</sup>**<sup>1,2,3,4,5,6</sup>*Cordova Public College, Philippines***Corresponding Author:** Jenylen Cabiso, **E-mail:** [jenylencabiso@gmail.com](mailto:jenylencabiso@gmail.com)**| ABSTRACT**

This study examines the levels of student engagement in traditional versus blended learning environments among students in Cordova Public College. There were 240 randomly selected students from different programs who answered an adapted survey questionnaire. Employing a quantitative descriptive-comparative research design, the study determined whether there are significant differences in cognitive, emotional and behavioral engagement between these two modalities. Data were gathered using and analyzed using independent T-test and one-way Analysis of Variance (ANOVA). The results revealed that compared to blended learning, traditional learning environment has higher level of cognitive, emotional and behavioral engagement. Moreover, a significant difference ( $p=0.02$ ) in student engagement was found between traditional and blended learning environments. Furthermore, results revealed that there is significant difference between age and student engagement in the traditional classroom setting ( $p=0.03$ ), also, program consistently demonstrates a significant relationship with student engagement in both traditional ( $F=3.33$ ,  $p=0.02$ ) and blended ( $F=3.97$ ,  $p=0.009$ ) learning modalities. These findings highlight the critical role of higher education to evaluate and improve their blended learning approaches in order to guarantee that they promote levels of engagement comparable to traditional settings.

**| KEYWORDS**

Student engagement, traditional learning, blended learning

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Significant changes have occurred in the world of education in recent years, especially with the integration of flexible learning modes brought about by technological advances and the challenges caused by the COVID-19 pandemic. Traditional higher education institutions were suddenly left with only one delivery method. The transition of all services to digital platforms led to a period of "emergency eLearning" (Cranfield et al., 2021). Teaching strategies need to be flexible, making it possible to offer training in a flexible manner at any time and location. Flipped classrooms can be implemented, in which students are given problems or questions during class, walk out to find the answers, and then return to discuss their findings. Online learning and physical instruction can be combined (Bilbao et al., 2020). Most educational institutions have long used the traditional classroom-based approach of instruction, which primarily depends on in-person interactions along with established schedules. However, new dynamics in the teaching-learning process have been brought about by the rise of flexible learning settings, including online, modular, and blended formats.

This shift raises important questions about how different learning environments affect student engagement, which is an essential element linked to academic success, motivation, and retention. In the context of tertiary education, student engagement is crucial to promoting student learning outcomes (Li and Xue, 2023). In addition, Chen et al. (2021) stated that one of the most

critical factors in assessing the quality of learning and predicting students' academic progress is their level of engagement in the classroom.

However, according to Salta et al., (2022), a significant level of students' emotional involvement can be attributed to the subsequent decrease in human interaction (between students or between students and instructors) that happens when students transition from traditional to online learning environments. In addition, despite their high level of engagement, students felt that online learning was less rigorous and effective than face-to-face instruction (Zapata-Cuervo et al., 2023).

This study addresses critical gaps in the continuous implementation of blended approach to education at Cordova Public College, that combines online and face-to-face classes by examining the engagement level of the students in each learning environment. Specifically, it explores how students actively and meaningfully participate in their learning process in terms of cognitive, emotional and behavioral. In order to generate data-driven insights that can guide policy decisions, instructional strategies, and future curriculum delivery improvements at Cordova Public College, it is essential that a comparative analysis of student engagement levels in traditional versus flexible learning environments be conducted as the college continues to refine its delivery methods.

## **Methodology**

This study employed a quantitative research strategy (Creswell, J. W. and Creswell, D. J., 2018) and a structured survey method to provide quantifiable data on students' levels of involvement in both traditional and blended learning environments. A precise, objective, and methodical procedure of collecting, evaluating, and interpreting numerical data to describe, predict, or control events. Although there are many ways to study engagement, a quantitative design was used to evaluate trends, compare variables, and statistically examine variations in involvement between the two instructional styles. The approach ensured objectivity while evaluating students' responses and allowed for the systematic collection of data. The study was conducted at Cordova Public College, located in Gabi, Cordova, Cebu. Undergraduate students from a variety of departments, including the College of Teacher Education (CTE), College of Computer Studies (CCS), and College of Hospitality Management (CHM), participated. These pupils' varied educational backgrounds enable a more thorough examination of engagement trends. Participation was voluntary, and respondents were limited to currently enrolled and active students during the data collection period. This made sure that the study's feedback came from people who were really using the institution's traditional and blended learning modalities. Three main factors were the focus of the study: student involvement, blended learning, and traditional learning. The primary research instrument was a printed questionnaire adapted from the engagement scale developed by Reeve and Tseng (2013), titled Predicting engagement with lessons and intrinsic motivation for learning: The role of the teacher's motivational communication. Only quantitative, closed-ended questions that gauge students' behavioral, emotional, cognitive, and agentic engagement make up the instrument. The original scale's validity and structure were preserved while the questions were adjusted to fit the context of both traditional and blended learning situations. For ease of access and completion, the printed versions of the questionnaires were manually given to students in several departments. The research followed a four-stage procedure modeled after structured survey methodologies. In order to make sure that respondents had encountered both traditional and blended learning contexts, the researchers looked at the institutional context and selected student participants from several departments during the exploration stage. This was followed by the instrument preparation stage, where questionnaire items were selected, adapted, and formatted based on the engagement scale of Reeve and Tseng (2013). The instrument's printed versions were thoroughly examined to make sure they were suitable, clear, and pertinent to the goals of the study. In order to enable effective and dependable retrieval, printed questionnaires were distributed throughout the three participating departments during the data collecting phase, and students completed them during their free time on campus. Once the responses were gathered, the data processing and analysis stage began. To determine the degree of involvement in both learning modalities, responses were manually arranged and tallied, and each variable was calculated using percentage approaches and fundamental statistical procedures. To find out if there were any notable changes between students' participation in traditional and blended learning environments, an ANOVA test was used. Interpreting the statistical results to derive significant conclusions in line with the study's goals marked the process's conclusion.

## **Literature Review**

Student engagement is widely recognized as a multidimensional construct consisting of cognitive, emotional, and behavioral components, all of which influence learning outcomes across different instructional modalities. Research shows that both traditional and technology-supported environments can foster engagement, but the mechanisms differ depending on instructional design and interaction patterns. Moreover, research found that cognitive engagement such as deep thinking, self-regulation, and knowledge integration is strongly influenced by instructional structure, feedback, and opportunities for interaction, regardless of delivery mode (Alam and Mohanty, 2024). Their findings also indicate that behavioral engagement, including participation and task completion, tends to be higher when learning activities are clearly organized and expectations are communicated, which often characterizes well-structured face-to-face settings. Similarly, Martin, Sun, and Westine (2020) emphasize that emotional

engagement is enhanced when students experience meaningful interaction with instructors and peers, suggesting that classroom climate and social presence remain critical factors in sustaining motivation and interest.

Blended learning environments, on the other hand, provide flexibility and access to resources but may also introduce challenges related to concentration, self-regulation, and sustained attention. Rasheed, Kamsin, and Abdullah (2020) reported that students in blended and online settings often struggle with distractions, time management, and reduced monitoring, which can affect cognitive engagement if not supported by structured activities and guided learning strategies. Furthermore, Aguilera-Hermida (2020) found that students' emotional responses such as motivation, confidence, and sense of belonging play a decisive role in determining their level of participation in blended or online learning environments. When instructors integrate interactive tasks, collaborative activities, and timely feedback, students demonstrate improved behavioral and emotional engagement. These studies collectively suggest that while both traditional and blended learning can achieve high engagement levels, the effectiveness of each modality depends largely on pedagogical strategies, learner autonomy, and the quality of interaction provided.

## Results and Discussion

Table 1. Profile of the respondents

Profile	f	%
<b>Age</b>		
18 – 20 years old	104	43.33
21 – 23 years old	115	47.92
24 – 26 years old	15	6.25
26 and above	6	2.5
<b>Total</b>	<b>240</b>	<b>100.00</b>
<b>Gender</b>		
Male	70	29.17
Female	170	70.83
<b>Total</b>	<b>240</b>	<b>100.00</b>
<b>Year Level</b>		
2 <sup>nd</sup> year	78	32.5
3 <sup>rd</sup> year	73	30.42
4 <sup>th</sup> year	89	37.08
<b>Total</b>	<b>240</b>	<b>100.00</b>
<b>Program</b>		
BEED	60	25.0
BSED	60	25.0
BSIT	60	25.0
BSHM	60	25.0
<b>Total</b>	<b>240</b>	<b>100.0</b>

In the profile of the respondents in terms of age, gender, year level and the program they enrolled are the classified variables to consider that can affect in the study. In terms of age, it shows that most respondents are within the 18–23 age range (91.25%), reflecting the traditional college age group. In terms of gender, female dominated over male, with 70.83% female and 29.17% male respondents. In terms of year level, respondent are distributed as 37.08% 4th year, 32.5% 2nd year, and 30.42% 3rd year. In terms of program, the distribution is equal across four programs—BEED, BSED, BSIT, and BSHM (25% each).

Table 2. Engagement Level in Traditional Learning Environment in Terms of Cognitive

S/N	Statement	Mean	SD	Interpretation
1	I try to connect new knowledge to what I already know	4.06	0.76	High
2	I take time to think deeply about class content.	3.90	0.73	High

3	I enjoy exploring complex ideas.	3.90	0.89	High
4	I organize and review my class notes regularly.	3.63	0.97	High
5	I actively seek out additional resources to understand topics.	3.90	0.89	High
6	I can sustain concentration during lessons.	3.72	0.84	High
7	I am mentally invested in learning tasks.	3.75	0.83	High
8	I set learning goals and monitor my progress.	3.82	0.87	High
9	I try to make all the different ideas fit together and make sense when I study for this class.	3.89	0.79	High
10	I make up my own examples to help me understand the important concept I am studying for this class.	3.96	0.86	High
<b>Average</b>		<b>3.85</b>	<b>0.84</b>	<b>High</b>

In the student engagement level in terms of cognitive, emotional and behavioral aspect is considered for the comparative analysis between traditional and blended mode of learning. Table 1 presents the engagement level in the traditional learning environment in terms of cognitive. It could be gleaned that indicator 1 (I try to connect new knowledge to what I already know.) was rated the highest Weighted Mean of 4.06 with verbal description High. Along this, indicator number 8 (I organize and review my class notes regularly.) rated lowest Weighted Mean of 3.63 though described as High. The Overall Mean of 3.85 finally described the engagement level in the traditional learning environment in terms of cognitive as High.

Shown in table 3 is the engagement level in the traditional learning environment in terms of emotional. Data revealed that indicator 18 (I feel excited learning new things in this class.) was rated the highest Weighted Mean of 4.20 with verbal description High. Along this, indicator number 14 (I am confident in expressing my thoughts and ideas.) rated lowest Weighted Mean of 3.61 though described as High. The Overall Mean of 3.95 finally described the engagement level in the traditional learning environment in terms of emotional as High. Although students are actively participating in the learning process, they have somewhat poorer habits for reviewing and consolidating what they have learned outside of the classroom. The gap emphasizes the necessity for methods that support self-regulated learning, organization, and regular study routines. This is supported by Bin Abdulrahman et al (2021), when they stated that study habits are the most important predictor of academic achievement and are particularly important to students' academic success.

Table 3. Engagement Level in Traditional Learning Environment in Terms of Emotional

<b>S/N</b>	<b>Statement</b>	<b>Mean</b>	<b>SD</b>	<b>Interpretation</b>
11	I feel proud of my academic accomplishments.	4.08	0.92	High
12	I feel calm and comfortable during class activities.	3.81	0.86	High
13	I enjoy collaborating with classmates.	4.19	0.99	High
14	I am confident in expressing my thoughts and ideas.	3.61	0.98	High
15	I feel motivated to improve my academic performance.	4.03	0.83	High
16	When we work on something in this class, I feel interested.	3.98	0.85	High
17	The class is fun and I enjoy the topics being discussed.	3.90	0.94	High
18	I feel excited learning new things in this class.	4.20	0.82	High
19	When I'm in this class, I feel good.	3.84	0.93	High
20	When we work on something in this class, I feel the sense of belongingness.	3.83	0.93	High
<b>Average</b>		<b>3.95</b>	<b>0.90</b>	<b>High</b>

Table 4. Engagement Level in Traditional Learning Environment in Terms of Behavioral

S/N	Statement	Mean	SD	Interpretation
21	I regularly attend my classes.	4.72	0.62	Very High
22	I complete and submit assignments on time.	4.37	0.81	Very High
23	I asked questions when I do not understand something.	4.04	0.89	High
24	I actively engage in group work and activities.	4.15	0.89	High
25	I complete readings and other preparatory work.	3.76	0.89	High
26	I make efforts to improve my class participation.	4.13	0.78	High
27	I pay attention during the class.	4.30	0.75	Very High
28	I try hard to do well in this class.	4.26	0.82	Very High
29	When I'm in this class, I listen very carefully.	4.19	0.76	High
30	When I'm in this class, I participate class discussions.	3.83	0.92	High
<b>Average</b>		<b>4.17</b>	<b>0.81</b>	<b>High</b>

Table 4 presents the engagement level in the traditional learning environment in terms of behavioral. It is reflected on the table that indicator 21 (I regularly attend my classes.) was rated the highest Weighted Mean of 4.72 with verbal description Very High. Along this, indicator number 25 (I complete readings and other preparatory work.) rated lowest Weighted Mean of 3.76 described as High. The overall Mean of 4.17 finally described the engagement level in the traditional learning environment in terms of behavioral as High. Despite their motivation, some students may still have trouble being open and confident when participating in class. This suggests the necessity for instructors' techniques that not only maintain students' interest but also foster a safe space where they feel free to voice their opinions. According to Siegel-Stechler (2023), instructor views on the goal of class discussions have an impact on students' feelings, which in turn influences the degree of safety, respect, and trust in the classroom, all of which have an impact on students' willingness to engage.

Table 5. Engagement Level in Blended Learning Environment in Terms of Cognitive

S/N	Statement	Weighted Mean	SD	Interpretation
1	I try to connect new knowledge to what I already know	3.98	0.73	High
2	I take time to think deeply about class content.	3.82	0.81	High
3	I enjoy exploring complex ideas.	3.71	0.86	High
4	I organize and review my class notes regularly.	3.72	0.91	High
5	I actively seek out additional resources to understand topics.	3.92	0.89	High
6	I can sustain concentration during lessons.	3.54	0.91	High
7	I am mentally invested in learning tasks.	3.63	0.90	High
8	I set learning goals and monitor my progress.	3.73	0.91	High
9	I try to make all the different ideas fit together and make sense when I study for this class.	3.79	0.82	High
10	I make up my own examples to help me understand the important concept I am studying for this class.	3.90	0.91	High
<b>Average</b>		<b>3.77</b>	<b>0.86</b>	<b>High</b>

Shown in table 5 is the engagement level in the blended learning environment in terms of cognitive. Indicator 1 (I try to connect new knowledge to what I already know.) was rated the highest Weighted Mean of 3.98 with verbal description High. Along this, indicator number 6 (I can sustain concentration during lessons.) rated lowest Weighted Mean of 3.54 though described as High. The Overall Mean of 3.77 finally described the engagement level in the traditional learning environment in terms of emotional as High. While traditional education encourages attendance discipline, in order to guarantee greater involvement and readiness, students' motivation and accountability for out-of-class learning activities must be strengthened. In the study conducted by Upara

et al (2023), point out that teachers might need to actively instruct students in using learning strategies and assessing resources outside of the classroom. In order to foster greater learner autonomy, it emphasizes giving careful thought to integrating students' viewpoints into classes and promoting reflection on the success of their own learning experiences.

Table 6. Engagement Level in Blended Learning Environment in Terms of Emotional

<b>S/N</b>	<b>Statement</b>	<b>Mean</b>	<b>SD</b>	<b>Interpretation</b>
11	I feel proud of my academic accomplishments.	4.01	0.91	High
12	I feel calm and comfortable during class activities.	3.83	0.92	High
13	I enjoy collaborating with classmates.	3.85	1.00	High
14	I am confident in expressing my thoughts and ideas.	3.70	1.00	High
15	I feel motivated to improve my academic performance.	3.92	0.87	High
16	When we work on something in this class, I feel interested.	3.82	0.90	High
17	The class is fun and I enjoy the topics being discussed.	3.78	0.89	High
18	I feel excited learning new things in this class.	3.93	0.89	High
19	When I'm in this class, I feel good.	3.79	0.95	High
20	When we work on something in this class, I feel the sense of belongingness.	3.78	1.00	High
<b>Average</b>		<b>3.84</b>	<b>0.93</b>	<b>High</b>

Table 6 presents the engagement level in the blended learning environment in terms of emotional. It could be gleaned that indicator 11 (I feel proud of my academic accomplishments.) was rated the highest Weighted Mean of 4.01 with verbal description High. Along this, indicator number 14 (I am confident in expressing my thoughts and ideas.) rated lowest Weighted Mean of 3.70 though described as High. The Overall Mean of 3.84 finally described the engagement level in the traditional learning environment in terms of cognitive as High.

It is still difficult to stay focused in blended learning environments, either because of internet distractions or less in-person monitoring. This emphasizes how crucial it is to use planned activities and captivating tactics in blended learning in order to maintain students' interest and optimize cognitive engagement. This is supported by Danie et al (2024), they stated that in innovative online blended learning, instructor assistance through creative teaching and learning is essential to maintaining meaningful, creative interactions that inspire students and foster improved academic performance.

Table 7. Engagement Level in Blended Learning Environment in Terms of Behavioral

<b>S/N</b>	<b>Statement</b>	<b>Mean</b>	<b>SD</b>	<b>Interpretation</b>
21	I regularly attend my classes.	4.63	0.72	Very High
22	I complete and submit assignments on time.	4.41	0.79	Very High
23	I asked questions when I do not understand something.	3.93	0.91	High
24	I actively engage in group work and activities.	3.97	0.87	High
25	I complete readings and other preparatory work.	3.80	0.85	High
26	I make efforts to improve my class participation.	4.00	0.86	High
27	I pay attention during the class.	3.97	0.91	High
28	I try hard to do well in this class.	4.13	0.83	High
29	When I'm in this class, I listen very carefully.	3.98	0.87	High
30	When I'm in this class, I participate class discussions.	3.86	0.88	High
<b>Average</b>		<b>4.07</b>	<b>0.85</b>	<b>High</b>

Shown in table 7 is the engagement level in the blended learning environment in terms of behavioral. Data revealed that indicator 21 (I regularly attend my classes.) was rated the highest Weighted Mean of 4.63 with verbal description Very High. Along this, indicator number 25 (I complete readings and other preparatory work.) rated lowest Weighted Mean of 3.80 described as High.

The Overall Mean of 4.07 finally described the engagement level in the traditional learning environment in terms of emotional as High. While blended learning increases students' motivation and sense of pride in their work. teachers must provide more inclusive and engaging opportunities that promote self-expression and active engagement in both online and offline settings. From the study conducted by Zhao et al (2022), teachers should provide learning environments where emotional safety is respected and valued. Additionally, efforts can be taken to create a welcoming learning environment where students can express and perceive themselves. Teachers should promptly offer differentiated emotional support that aligns with blended learning's traits in order to promote task involvement, positive relationships, self-assurance, security, and success.

Table 8. Summary on Engagement Level in Traditional and Blended Learning Environment

Indicators	Traditional			Blended		
	Mean	SD	Interpretation	Mean	SD	Interpretation
Cognitive	3.85	0.84	High	3.77	0.86	High
Emotional	3.95	0.90	High	3.84	0.93	High
Behavioral	4.17	0.81	High	4.07	0.85	High
Overall	3.99	0.85	High	3.89	0.88	High

Table 8 reveals the summary on engagement level in traditional and blended learning environment. Compared to blended learning, traditional learning environment has higher level of cognitive engagement (3.85 Weighted Mean). Meanwhile, in traditional learning environment, emotional engagement (3.95 Weighted Mean) is higher than in blended learning environment. Lastly, behavioral engagement in traditional learning environment (4.17 Weighted Mean) outperforms blended learning environment by a small margin. Although behavioral engagement in blended learning is generally high, the gap between attendance and preparatory work highlights the need for interventions that foster greater self-regulation and accountability among students. As per Esnaashari et al (2025), for students to succeed, self-regulated learning (SRL) is essential, especially in blended learning (BL) settings where students are expected to take more responsibility for their education.

Table 9. Significant Difference on Students' Level of Engagement Between Traditional and Blended Learning Environment

Variables	df	t-value	p-value	Decision	Interpretation
Traditional and Blended	239	1.89	0.02	Reject H <sub>0</sub>	Significant

Table 9 indicates a significant difference in student engagement between traditional and blended learning environments ( $t=1.89$ ,  $p=0.02$ ), confirming that instructional modality directly shapes how learners participate. Studies affirm this pattern, with Bekele, Melese, and Sime (2025) showing that blended formats enhance engagement by combining flexibility with face-to-face interaction, while de Brito Lima et al. (2021) and Li et al. (2025) highlight that instructional approaches fundamentally alter cognitive and emotional involvement. This implies that blended learning is not merely an alternative to traditional instruction but a modality that, when carefully designed, can provide richer and more inclusive opportunities for student engagement.

Table 10. Significant Difference Between Profile and Engagement Level

Variables	computed value/p-value	Traditional		Blended		
		Decision	Result	Decision	Result	
Age	F=2.93** p=0.03	Reject H <sub>0</sub>	Significant	F=2.31 p=0.07	Fail to reject H <sub>0</sub>	Not Significant
Gender	t=1.53 p=0.06	Fail to reject H <sub>0</sub>	Not Significant	t=0.68 p=0.50	Fail to reject H <sub>0</sub>	Not Significant
Year Level	F=1.53 p=0.22	Fail to reject H <sub>0</sub>	Not Significant	F=1.89 p=0.153	Fail to reject H <sub>0</sub>	Not Significant
Program	F=3.33** p=0.02	Reject H <sub>0</sub>	Significant	F=3.97** p=0.009	Reject H <sub>0</sub>	Significant

\*\*significant at  $p<.05$

The table shows a significant difference between age and student engagement in the traditional classroom setting ( $F=2.93, p=0.03$ ), highlighting that learners' age groups distinctly influence how they participate in face-to-face learning. This suggests that older students may bring greater focus, discipline, or prior learning experiences, while younger students may approach lessons with different levels of readiness or learning styles—differences that become more pronounced in a purely physical classroom. Interestingly, this significant effect does not appear in the blended learning environment ( $F=2.31, p=0.07$ ), where age no longer plays a determining role in engagement. The flexibility of blended instruction—through varied modalities, asynchronous pacing, and opportunities for self-directed learning—appears to reduce the disparities that age typically creates. Li et al. (2025) stressed that instructional approaches can either magnify or minimize demographic influences, with face-to-face settings often amplifying them. Therefore, the findings underscore that while age significantly shapes engagement in traditional learning, blended learning acts as an equalizer, fostering more inclusive participation across different age groups.

Furthermore, result shows no significant relationship between gender and student engagement in either traditional ( $t=1.53, p=0.06$ ) or blended ( $t=0.68, p=0.50$ ) learning environments. This means that whether learners are male or female, their level of engagement remains largely comparable across both modalities. Li et al. (2023) observed in a meta-analysis that demographic factors such as gender often exert less influence on engagement compared to pedagogical design and classroom context. Similarly, Loyola-Carrillo et al. (2025) emphasized that engagement is shaped more by task type and instructional structure than by gender differences. This implies that educators should not assume gender-based disparities in participation but instead focus on fostering inclusive learning strategies that provide equal opportunities for engagement regardless of gender identity. The findings also indicate no significant relationship between year level and student engagement in both traditional ( $F=1.53, p=0.22$ ) and blended ( $F=1.89, p=0.153$ ) settings. This suggests that students, regardless of whether they are in earlier or later stages of their academic journey, show similar levels of engagement in both modalities. Bekele, Melese, and Sime (2025) support this by showing that blended learning enhances engagement across different groups of learners, suggesting that academic seniority does not strongly determine participation when instructional design is consistent and responsive. This can be concluded that programs can implement blended learning across all year levels without concern that engagement will decline for either underclassmen or upperclassmen, making modality design a more crucial factor than academic standing.

In addition, program consistently demonstrates a significant relationship with student engagement in both traditional ( $F=3.33, p=0.02$ ) and blended ( $F=3.97, p=0.009$ ) learning modalities. These finding highlights that the academic discipline students belong to strongly influences how they engage with lessons. Programs with hands-on or laboratory-based requirements may require higher levels of active participation and may encounter unique challenges in adapting to blended formats, while more theory-driven programs may find it easier to maintain engagement across both modalities. De Brito Lima et al. (2021) emphasized that the effectiveness of blended learning largely depends on how well program-specific needs are met, while Loyola-Carrillo et al. (2025) reinforced that engagement is multidimensional and highly sensitive to task demands. This means that institutions must design program-specific instructional strategies that align with the distinct learning requirements of each discipline, ensuring that engagement is maximized whether learning is conducted traditionally or in a blended form.

## **Conclusion**

Based on the findings, student engagement in both traditional and blended learning environments was found to be generally high across cognitive, emotional, and behavioral dimensions. Traditional learning, however, consistently obtained slightly higher mean scores than blended learning in all three dimensions. Despite this, blended learning also achieved high engagement ratings, highlighting its capability to sustain meaningful learning when instructional strategies are well designed. Moreover, findings revealed a significant difference in student engagement between traditional and blended learning environments. This confirms that instructional modality has a direct influence on how learners participate. While traditional learning still holds a slight advantage, blended learning remains an effective modality that can support engagement when it integrates structured activities, teacher guidance, and interactive features. The study further established that age has a significant relationship with engagement in the traditional classroom, indicating that older students tend to engage differently in purely face-to-face settings. However, this relationship was not observed in blended learning, suggesting that blended modalities reduce age-related differences through flexible pacing and multiple learning pathways. In contrast, gender and year level showed no significant relationship with engagement in either modality, meaning these characteristics do not substantially influence student participation. Program or course, however, demonstrated a significant relationship with engagement across both traditional and blended modalities.

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