International Journal of Instruction *July 2025 ● Vol.18, No.3*
e-ISSN: 1308-1470 ● www.e-iji.net *p-ISSN: 1694-609X*
pp. 239-262

Article submission code: 20241128074946 Received: 28/11/2024 Revision: 09/02/2025 Accepted: 22/02/2025 OnlineFirst: 08/04/2025

Investigating the Effect of Lecturer-Student Interaction on Student Engagement in Class

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Lecturer-student interaction, as a key determinant of student attitudes toward learning and academic performance, has garnered considerable attention and investigation by researchers. A positive interaction between lecturers and students can help students bolster their learning engagement. This study undertakes a review of relevant literature and research concerning lecturer-student interactions and examines its effects on student engagement at a public university in Vietnam. A self-designed cross-sectional quantitative survey was used in this study. Analysis of the 225 responses indicates that students exhibit a significant interest in lecturer-student interactions, and the current level of such interactions is relatively high. Additionally, the findings reveal a positive correlation between lecturer-student interactions and student engagement, and demonstrate a substantial effect of that interaction on student engagement. Specifically, when students perceive a high degree of care, support, and rapport from lecturers, they exhibit increased involvement in learning across behavioural, emotional, and cognitive dimensions. The limitations and academic suggestions for further research are also addressed in this study.

Keywords: communication, pedagogical interaction, lecturer - student interaction, student engagement, academic performance

INTRODUCTION

Unlike previous generations, today's students are less encumbered by constraints such as economic hardship and familial obligations. As a result, the determinants of students' attitudes towards learning predominantly arise from factors such as individual motivation, relationships with instructors, and interactions with peers. In the contemporary educational contexts, the interaction between educators and students is regarded as a pivotal element in enhancing student engagement and optimizing academic outcomes. Prior researches underscore that well-structured and productive interactions between lecturers and students can lead to high levels of students'

Citation: Oanh, D. T. K., & Nguyen, T. N. T. (2025). Investigating the effect of lecturer-student interaction on student engagement in class. *International Journal of Instruction*, *18*(3), 239-262.

motivation, intensive participation, and better academic achievement (Nugent, 2009; Tuan et al., 2016).

Lecturer-student interaction involves a wide range of aspects, including communication methods, feedback mechanisms, teaching methodologies, and personal connections that take place in the classroom. This interaction is critical for both the effective transfer of knowledge and the establishment of a nurturing educational environment that encourages active student participation. According to Rahman et al. (2020), the first priority to helping a student become more motivated and involved, and thus educationally successful, is constructing and retaining positive teacher and student interaction. Pervin et al. (2021) also supported this perspective by suggesting that students who perceive their interactions with teachers as positive tend to experience an improvement in their overall GPA, reflecting an enhancement in academic performance. Similarly, students who find relationships and connections with lecturers comfortable and supportive will exhibit a high degree of participation in behavioural, emotional, and cognitive dimensions (Mallik, 2023). Conversely, negative perceptions of relationships with lecturers significantly hinder all forms of classroom engagement and academic achievement (Mallik, 2023). Those who have a strenuous relationship with their teachers tend to avoid the classroom and hesitate to ask questions when they encounter understanding difficulties, even if they participate in the class. Consequently, they get poor grades on the final examination and diminish their relatedness to the school campus (Mallik, 2023).

The field of higher education in Vietnam is currently experiencing a significant shift in instructional approaches, with a focus on fostering students' active engagement in the learning process. This transformation aims to enhance the overall quality of education, aligning with the evolving demands of society and the modern professional landscape. To effectively respond to the evolving landscape of teaching methods in higher education in Vietnam, it is crucial to examine the attributes of teacher-student interactions, their relationship with student engagement, and the impact of these interactions on student engagement in the learning process. Therefore, this study will focus on addressing the problems highlighted in the following research questions:

Research question 1 (RQ1). What is the level of lecturer-student interaction at a public university in Vietnam?

To find the solution for RQ1, the study investigates features of lecturer-student interaction (LSI) and tries to provide the most objective evaluation. The mentioned features include (1) lecturers' attention to each individual and their language, gestures, and behaviours used in the classroom; (2) lecturers' orientation, guidance, and teaching methods; and (3) learning environments.

Research question 2 (RQ2): To what extent does lecturer-student interaction in class affect students' engagement at a public university in Vietnam?

Within the scope of RQ2, the study will identify the correlation between lecturer-student interaction and students' engagement and its degree of influence.

Theoretical Underpinnings

Lecturer-student interaction

The relationship between interlocutors, including the sender (the teacher), who possesses the information (knowledge) to transmit to the receiver (the student), characterizes communication in education (Suciu, 2024). Since "communication starts and ends a pedagogical act during the lesson and other pedagogical meetings" (as cited in Navickienė et al., 2019), teaching only takes place when the teacher transmits content (knowledge, skills, personal attributes) through means of communication (verbal and non-verbal) (stimulus) and students acquire and respond to content (response). So, in essence, teaching is an interactive activity between the teacher and the students. According to Navickienė et al. (2019), pedagogical interaction occurs when there is a reciprocal exchange of information, an open dialogue between the teacher and the students, and when the students cooperate with others. Therefore, establishing interactions between the teacher and students provides students with opportunities to develop new knowledge and skills.

Learning is not just about imparting knowledge; it is also about communication, allowing both parties to learn from each other and share emotions, experiences, skills, and positive energy to enhance the positivity of both teachers and students in order to achieve the best results in the learning process. So, regardless of the degree of content and the modernity of teaching methods and teaching tools, the interaction and rapport between lecturers and students play a pivotal role and contribute to the success and quality of an educational program. Lecturer-student interaction contributes to students' cognitive, social, and emotional growth as well as their academic learning (Elegbe, 2018).

Lecturer-student interactions provide many positive benefits for students, including academic support, professional development, mentoring, and career planning (Briody et al., 2019). Establishing lecturer-student interactions not only reduces the distance between faculty and students outside the classroom (Briody et al., 2019) and the level of negative stress in the classroom but also improves the learning environment (Makarova, 2021). Research has correlated the teacher-student relationship with school adjustment and behavioral outcomes, particularly problem behavior (Maseka et al., 2024). The lecturer-student interaction has a significant impact on student satisfaction in both face-to-face and online teaching modes (Johnson et al., 2014). The quality of the relationship between the lecturer and students influences and has important implications for student academic achievement (Hattie, 2009; Leonard et al., 2024). Interactions between lecturers and students have a significant impact on personal development, values, attitudes, relationships with peers, intellectual growth, interest in ideas, and intellectual stimulation and satisfaction (Leonard et al., 2024). Additionally, these interactions also contribute to making informed decisions, enhancing academic programs, and improving student competence (Sundani & Mamokhere, 2021). The warm and friendly lecturer-student interaction helps the lecturer convey information smoothly, and students achieve effective outcomes (Göktaş & Kaya, 2023). In addition, through interactions with students, lecturers balance expectations and requirements and encourage both

parties to find ways to integrate innovative methods into the teaching and learning process (Žydžiūnaitė & Daugėla, 2020).

Simultaneously, a representative model for measuring the level of interaction between lecturers and students is also explored and analyzed to provide a more comprehensive and in-depth perspective on this interaction within the higher education environment. The model under consideration is the Teaching Through Interaction (TTI) framework by Hamre et al. (2013), which consists of three main components: Emotional Supports, Classroom Organization, and Instructional Supports. Emotional Support focuses on fostering a positive classroom environment, demonstrating teachers' sensitivity to students' needs, and respecting their perspectives while minimizing negative factors such as conflicts or excessive pressure. Additionally, it emphasizes how classroom activities promote and enhance students' emotional and social development (Hamre et al., 2013). Classroom Organization highlights the management of student behavior, the optimization of instructional time, and the implementation of effective learning formats to maximize learning opportunities while minimizing classroom disruptions (Hamre et al., 2013). Instructional Support centers on the development of learning concepts, the quality of teacher feedback, language modeling, and the diversity of teaching methods, all of which encourage deep thinking and expand students' understanding (Hamre et al., 2013). To comprehensively assess the extent and current state of lecturer-student interactions in classroom settings at Ho Chi Minh City University of Technology and Education, this study develops a survey questionnaire based on two key components: (1) the attention and behaviours of lecturers and (2) the orientation, guidance, and teaching methods of lecturers. These components not only reflect the nature of interaction but also serve as a foundation for more detailed and precise measurement and analysis.

In brief, theoretical and empirical studies have demonstrated the significance of lecturer-student interaction in class. Optimizing this positive interaction enables students to more actively engage in their lessons and explore knowledge. The lecturer-student interaction has an impact on students' academic performance and the overall teaching-learning process. On the other hand, whenever there is a shortage of connections during class time, some negative outcomes may be inevitable.

Student engagement

"Student engagement" is an ambiguous and debated notion (Healey et al., 2014) yet is essential for academic success (Reyes et al., 2012). Student engagement denotes a student's readiness to partake in standard educational activities, including attending classes, submitting mandatory tasks, and adhering to teacher directives during lessons (Chapman, 2002). It includes the student's effort, persistence, attentiveness, engagement, interaction with educators and classmates, adherence to regulations, and lack of disruptive behavior (Chui et al., 2024). Student engagement is characterized as interest in and dedication to learning, comprising two levels: "authentic engagemen" and "ritualistic engagement" (Dietrich & Balli, 2014). Healey et al. (2014) divided this term into two broad areas, including (i) student engagement, which refers to how students invest time and energy in their own learning, and (ii) student engagement,

which refers to how institutions engage and empower students to shape their learning experiences. Not only does student engagement serve as an indicator of their academic performance in school (Ali & Hassan, 2018), but it also significantly influences achievement and learning in higher education (Kahu, 2011), and it has a positive correlation with positive experiences and learning outcomes (Levy, 2014). According to Ali and Hassan (2018), students who actively engage in school demonstrate high academic achievement, while those who do not engage demonstrate low academic achievement and negative attitudes and behaviours. As a result, student engagement has become an important factor for both educational institutions and educators themselves.

Student engagement is a multidimensional phenomenon (Collaço, 2017), with both behavioural and affective components (Handelsman et al., 2005), or four distinct perspectives: behavioural, psychological, sociocultural, and holistic (Kahu, 2011). Student engagement does not only have four dimensions, including general learning skills, emotional engagement with class material, engagement/interaction with instructors and peers, and performance (Handelsman et al., 2005), but also concludes four groups of factors, namely antecedent, facilitator, indicator, and outcomes (Trolian, 2024). Student engagement is described as the tendency to engage behaviourally, emotionally, and cognitively in learning activities, is a key construct in motivational research (Thijs et al., 2009). While behavioural engagement refers to students' active participation in learning activities, involvement, and interaction, cognitive engagement focuses on the extent to which students are intellectually invested in learning. Emotional engagement refers to the range and quality of emotional responses students have to teachers, peers, learning tasks, and the school environment.

Student engagement is an important factor that contributes to and significantly affects student learning, achievement, and outcomes (Trolian, 2024; Suaalii &Tufuga, 2024), as well as academic success (Cuong, 2021). Students who are actively involved in school activities show more effort, experience more positive emotions, and pay more attention in class compared to students who are less actively involved (Fredricks, 2004). Students who participate during lectures have better learning outcomes than when they do not (Campbell & Mayer, 2008). Students actively participate in class, achieving high academic achievement and having positive attitudes and behaviours (Ali & Hassan, 2018). Therefore, with an adequate level of engagement, students actively dedicate themselves to their studying activities, which, in turn, positively contributes to their academic performance and grades. Particularly during class time, students demonstrate better in terms of memory, active contributions, critical thinking, and systematic analysis (Bakker et al., 2015). On the contrary, based on a systematic review of studies on student engagement, Reyes et al. (2012) generalized the drawbacks of disengaged students, including being distracted, less likely to work towards higher educational goals, having lower grades, being more likely to drop out, being more passive learners, and feeling bored, anxious, or even angry in class.

Student engagement is shaped throughout the learning process and continues to be developed by the learning environment, interactions, and higher education experiences (Trolian, 2024). Student engagement is demonstrated by asking questions or working collaboratively with other students (Ahlfeldt et al., 2005). Instructors can enhance

student engagement by asking relevant questions during lectures and providing immediate feedback (Campbell & Mayer, 2008), combining short lectures with active learning activities such as developing concept maps, problem-solving exercises, and classification grids (Goldberg & Ingram, 2011), or using simulation games (Auman, 2011). Collaço (2017) suggested suggestions for increasing student engagement in higher education include (i) incorporating relevant and intriguing activities that promote teacher-student interaction as well as student teamwork; (ii) creating a safe, learner-centered environment that respects diverse talents and learning styles; (iii) setting clear goals, establishing high expectations, and providing timely feedback. Student engagement in academic activities is positively and significantly influenced by students' cognition and adaptive behavior (Vu & Thi, 2024).

According to the approach that clarifies the relationships among different aspects of student engagement—emotion, cognition, and behavior—this research also identifies and focuses on examining student engagement through two dimensions. "Interest" section (includes emotion and cognition) shall display students' connection to learning activities and the school environment and display their critical thinking and knowledge application. "Behavior" section will reflect students' proactiveness and participation. Actions like maintaining eye contact, actively responding, and engaging in group activities demonstrate commitment to learning. Beyond class, students collaborate on assignments and seek academic support, fostering an active learning approach.

In short, education is not just about imparting knowledge but also about providing students with learning opportunities to develop both their skills and affection. Students' full and active engagement in routine university activities is considered one of the crucial factors that significantly influence their mastery of knowledge, skills, and affection. Therefore, student engagement should be one of the strongest drivers for improving the quality of teaching in higher education (Gašpar & Mabiý, 2015)..

METHOD

Research objectives

The research objective is to investigate the effect of lecturer-student interaction on student engagement in class at a public university in Vietnam. The two terms are explored in the following areas: (1) the attention and behaviours of lecturers (AB) and their orientation, guidance, and teaching methods (OGT); and (2) the interest (IT) and behaviours (BH) of students.

Sample size and participants

Based on the strength of the exploratory factor analysis results and to guarantee the reliability of selecting the sample size, this study obeys the general rule of having a minimum of five times as many observations as the number of variables to be analysed and a more acceptable ratio of 10:1 (Hair et al., 2018). The 5:1 ratio (five observations per variable) and the 10:1 ratio (ten observations per variable) are both intended to ensure the reliability and accuracy of statistical analyses. To optimize the balance between sample size and feasibility for this study, a 9:1 ratio, falling between these two commonly used ratios, has been chosen. Additionally, the 9:1 ratio is deemed appropriate for the specific requirements and conditions of this research, as it provides a

sufficient number of observations to ensure reliability and accuracy of the results without excessively increasing the sample size.

With 25 variables (or items) for the scale of the lecturer-student interaction (17 variables) and student engagement (8 variables), as shown in Table 2 and Table 3, the minimum sample size is $N \geq 25 \times 5 = 125$. This study collected 225 observations (participants) for 25 variables, which exceeds the threshold value for the acceptable sample size to investigate the effect of lecturer-student interaction on student engagement at Ho Chi Minh City University of Technology and Education (HCMUTE) in Vietnam.

Table 1 presents the demographic characteristics of the studied participants. According to the data, the number of students surveyed meets the expectations. Specifically, regarding academic year, the distribution of students is relatively even across the first year, second year, third year, and fourth year, with respective figures of 47 (20.9%), 63 (28.0%), 63 (28.0%), and 52 (23.1%). In terms of gender, at HCMUTE, engineering disciplines account for over 70% of students, resulting in a higher number of male students. This number is 160, more than twice the female figures, according to the survey. Similarly, the nature and characteristics of the training programs at HCMUTE differentiate the number of students in each discipline group participating in the survey. The Technology and Engineering group is the largest, comprising 134 students and accounting for 59.6%. The Foreign Languages group has the lowest number of students, with 14 and 6.2%, respectively. The remaining groups, Civil Engineering & Construction and Economics, have decreasing numbers of students in the order 44 (19.5%) and 33 (14.7%), respectively.

Table 1
Demographic characteristics of participants

Characteristics	Frequency	Percent
Gender	225	100
Male	160	71.1
Female	65	28.9
Academic year	225	100
1st year	47	20.9
2nd year	63	28.0
3rd year	63	28.0
4th year	52	23.1
Fields of education	225	100
Technology and Engineering	134	59.6
Civil Engineering & Construction	44	19.5
Economics	33	14.7
Foreign languages	14	6.2

Instrument

Firstly, we designed a questionnaire on lecturer-student interaction and student engagement using a 5-point Likert scale, which ranges from strongly disagree to strongly agree. The questionnaire consisted of 20 items about lecturer-student interaction and 11 items about student engagement. Participants are guided to choose one of the five response options that best aligns with their opinions.

In the first round of exploration factor analysis, three items of lecturer-student interaction were deleted to guarantee a statistically significant value. The remaining items were divided into two categories and named "Attention and behaviours of lecturers" and "Orientation, Guidance, and Teaching Methods." Three unsuitable items for student engagement were also removed. The remaining items were divided into two groups: Interest and Behaviour.

In the second round of the exploration factor analysis, the KMO values exceeding .50 (.94 and .86) indicated that the data set was well-suited for a factor analysis, or that the analysis was beneficial for the data. Next, the sig values from Bartlett's tests under .05 (.00) showed that variables were significantly correlated.

Table 2
Exploration factor analysis findings of lecturer-student interaction

Code	Component	
	1	1
O4.	.758	
L1.	.757	
O1.	.740	
L2.	.726	
O8.	.710	
L4.	.707	
O3.	.685	
O5.	.678	
O2.	.660	
O7.	.599	
O9.	.595	
A6.	.560	
L5.		.855
A1.		.691
A4.		.613
A5.		.605
L3.		.585

Table 3
Exploration factor analysis findings of student engagement

Code	Component	
	1	1
C1.	.804	
C2.	.757	
B2.	.743	
C3.	.740	
B6.	.703	
E1.		.895
E2.		.770
B5.		.689

After two rounds of exploration factor analysis, the questionnaire includes 25 items, of which 17 are about lecturer-student interaction (Table 2) and 8 are about student engagement (Table 3).

To examine whether the items meet the reliability requirements, we conducted a reliability Cronbach's alpha test. The test yielded values of .92 and .85, respectively, both of which exceeded the reliability threshold of.70. So, the reliability of two variables was good (Table 4).

Table 4
Cronbach's Alpha

Variables	Cronbach's Alpha
Lecturer – Student interaction **(LSI)**	.92
Student engagement **(SE)**	.85
Cronbach's Alpha	.94

With the help of exploration factor analysis and Cronbach's alpha coefficient, the questionnaire with 25 items under two main factors named "Lecturer-Student Interaction" (17 items) and "Student Engagement" (8 items) is used to collect data on the effect of lecturer-student interaction on student engagement in class in Vietnamese.

Data collection and analysis

The questionnaire was distributed individually to students, either in person or online. Students were required to complete the questionnaire in a specific order, including a consent question for the survey and information relevant to the current research. The participants complete the questionnaire anonymously, and the confidentiality of their responses is guaranteed.

The study received 231 responses in total. Six responses were considered invalid because they were incomplete or unapproved for the answer. SPSS software, version 22.0, supported the analysis of 225 responses (97.4%) that met the research requirements. For convenience in evaluation and analysis, the scale values are specifically defined (Table 5).

Table 5
Scale values

Scale	Meaning	Mean
1	Very low	$1 < M \leq 1.8$
2	Low	$1.8 < M \leq 2.6$
3	Moderate	$2.6 < M \leq 3.4$
4	High	$3.4 < M \leq 4.2$
5	Very high	$4.2 < M \leq 5$

FINDINGS

Lecturer-student interaction in class

Generally, with a mean (M) score of 4.00 and a standard deviation (SD) of.63, lecturer-student interaction (LSI) is considered "High." Regarding two main themes, "Orientation, Guidance, and Teaching Methods" receives the highest mean score of 4.15 (SD =.64), and the other figures belong to "Attention and behaviours of lecturers," with M = 3.85 and SD =.74. So, it can be concluded that "Orientation, Guidance, and Teaching Methods" play a more significant role in the development of LSI (Table 6).

The analysis of the LSI reveals no significant differences between male and female students. Levene's test indicated homogeneity of variances with a significance value of 0.15, suggesting that the variances of the two groups are comparable. Additionally, the independent sample t-test yielded sig. = 0.49 (>0.05). This further supports the conclusion that there are no statistically significant differences in male and female students' perceptions of lecturer-student interaction, indicating that both groups share similar classroom experiences.

Table 6
Lecturer-student interaction in class

Code	Items	Category	Mean	Standard deviation
A1	My lecturer is aware of my needs and learning styles.	Attention and behaviours of lecturers (AB) (3.85)	3.78	.99
A2	My lecturer remembers and properly calls my name during class.		3.69	1.15
A3	My lecturer often changes methods and ways to communicate with me and my classmates.		3.78	.99
A4	My lecturer often creates interesting surprises in class.		4.17	.83
A5	The atmosphere in my class is warm and welcoming.		3.84	1.05
O1	My lecturer provides personalized feedback or support to me during class activities.	Orientation, guidance, and teaching methods (OGT) (4.15)	4.22	.94
O2	My lecturer provides clear instructions at the beginning of each class session.		4.16	.87
O3	My lecturer often uses interactive teaching methods such as group discussions or hands-on activities.		4.30	.78
O4	My lecturer encourages my participation in activities during class.		4.12	.96
O5	My lecturer provides easy and interesting examples or demonstrations to clarify complex concepts or theories.		4.04	.94
O6	My lecturer delivers assignments or activities around current events and real-world issues.		4.19	.81
O7	My lecturer offers different activities to encourage interactions between lecturer and students.		3.89	1.07
O8	My lecturer encourages us to raise questions in class.		4.02	.94
O9	My lecturer promotes a positive and respectful atmosphere for open communication and discussion.		4.10	.83
O10	My lecturer encourages students' collaboration and teamwork.		4.34	.84
O11	My lecturer often uses technology or multimedia resources to enhance our learning experience.		4.12	.94
O12	My lecturer encourages us to give feedbacks to others' work.		4.25	.81
	Lecturer - Student interaction		4.00	.63

As shown in Table 7, the interaction experiences are similar among students of different years and majors. Regarding the variable of academic year, the Levene test for variance differences has a sig. value of .05, and the ANOVA test has a sig. value of .65 (> .05). In other words, students from the 1st to the 4th year have the ability to build good interactions with their lecturer. Students from various academic disciplines have also experienced similar interactions with their lecturers. The Levene test for equality of variances yielded a significance level of Sig =.01 (<.05), indicating homogeneity of

variances across different academic disciplines. However, the ANOVA test revealed a significant effect with Sig =.80 (> .05), suggesting that there is no difference in the interaction with lecturers among various majors.

Table 7
Differences between batches and fields of education towards lecturer-student interaction in class

	Levene's Test	ANOVA
Batches	.05	.65
Fields of education	.01	.80

Student engagement in class

According to Table 8, when comparing the mean values across the two classifications, students demonstrate the higher engagement through "Interest" toward their lecturers (M = 4.10), while the lower engaged observable behaviors are of "Behavior" (M = 3.77). However, both categories show a "High" engagement status among students.

Table 8
Student engagement in class

Code	Items	Category	Mean	Standard deviation
I1	I look forward to the days with my favorite subjects.	Interest **(IT)** (4.10)	4.17	.94
I2	I like competitive intellectual discussions with my teachers, and share my thoughts or opinions		4.08	.89
I3	I actively participate in group work, discussions, or collaborative projects, demonstrating my ability to work well with my friends.		4.08	.90
B1	I ask a lot of questions in class, such as clarifying questions, critical awareness questions, comparison questions, reflective questions, etc.	Behavior **(BH)** (3.77)	3.69	1.04
B2	I effectively tackling complex problems or tasks by applying knowledge and skills to find solutions or explore new ideas.		3.60	1.13
B3	I usually think critically to analyze information, make connections between matters, and sometimes seek clarification or further information about the discussed topic.		3.70	1.07
B4	I usually raise my hands when there are questions from my lecturer.		3.92	.87
B5	I use my lecturer's support to help with personal/non-academic problems.		3.92	.88
	Student engagement		3.94	.66

Table 9 shows that student engagement is similar across academic batches and majors. Despite the differences in nature and characteristics between technical/engineering and non-technical/non-engineering areas, as well as the experiences of different batches, involvement in academic activities is similar in both categories.

Table 9
Differences between batches and fields of education towards student engagement

	Levene's Test	ANOVA
Batches	.02	.72
Fields of education	.02	.10

Effects of lecturer-student interaction on student engagement

Table 10 provided us with the necessary information to evaluate the relationship between LSI and student engagement. The Pearson correlation coefficient of r = .71 between LSI and student engagement indicates a strong positive association. This suggests that as lecturer-student interaction is encouraged at higher levels, students tend to pay more attention and contribute more actively to their learning process.

In tables font size 9 must be used and vertical lines must be not be drawn. When the contents of the table cannot fit into the table, font size 9 might be used. Number of the table and the title must be written above the table.

Table 10
Correlation between variables

		AB	OGT	IT	BH	LSI	SE
AB	Pearson Correlation	1	.688**	.546**	.529**	.930**	.616**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	225	225	225	225	225	225
OGT	Pearson Correlation	.688**	1	.731**	.494**	.907**	.697**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	225	225	225	225	225	225
IT	Pearson Correlation	.546**	.731**	1	.523**	.688**	.864**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	225	225	225	225	225	225
BH	Pearson Correlation	.529**	.494**	.523**	1	.558**	.881**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	225	225	225	225	225	225
LSI	Pearson Correlation	.930**	.907**	.688**	.558**	1	.711**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	225	225	225	225	225	225
SE	Pearson Correlation	.616**	.697**	.864**	.881**	.711**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	225	225	225	225	225	225

**. Correlation is significant at the 0.01 level (2-tailed).

In investigating the effect of lecturer-student interaction (LSI) on student engagement (SE), the Pearson correlation coefficients offer insightful details about their interrelationships. The overall Pearson correlation coefficient of r =.71 between LSI and student engagement indicates a strong positive association, suggesting a significant link between enhanced lecturer-student interaction and increased student engagement. Specifically, the sub-variances of LSI, including Attention and behaviors of lecturers (AB), and Orientation, guidance, and teaching Methods (OGT) demonstrate Pearson correlation coefficients of r =.62 and r =.70, respectively. Both AB and OGT exhibit a positive correlation with student engagement, with orientation demonstrating a slightly stronger correlation. This suggests that effective interactions that focus on maintaining students' attention (e.g., being aware of students' learning styles and remembering their names) and guiding their orientation (e.g., providing personalized feedback or support during class activities) significantly contribute to their participation levels.

On the other hand, examining the correlations between student engagement sub-variances and LSI provides additional context. The Pearson correlation coefficient between interest (IT) and LSI is r =.68, while for behaviour (BH) and LSI, it is r =.56. These results indicate that students' interest in their learning experiences is moderately to strongly associated with lecturer-student interactions, whereas their behavioural aspects in the learning environment show a weaker, yet positive, correlation. This differential effect suggests that while lecturer-student interaction notably enhances students' interest and engagement, its effect on behavioural aspects might be less pronounced. Overall, these statistics highlight the significant role of lecturer-student interaction in promoting student engagement, with a particular emphasis on AB, OGT, and student interest.

In conducting a multiple regression analysis using SPSS to assess the effect of LSI, particularly the components of AB and OGT, on student engagement, the findings reveal several key insights.

The model's adjusted R-squared value of R =.517 signifies that approximately 51.7% of the variance in student engagement is accounted for by the independent variables AB and OGT, indicating a moderate to strong explanatory power of these factors. The Durbin-Watson statistic of 2.007 suggests that the residuals are not exhibiting first-order autocorrelation, thereby validating the independence of the residuals and the reliability of the model's assumptions (Table 11).

Table 11
The model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.722[a]	.521	.517	.45911	2.007

a. Predictors: (Constant), AB, OGT
b. Dependent Variable: Student Engagement

The F-test significance value of.00, which is below the threshold of.05, confirms that the regression model is statistically significant and appropriately fits the data, reinforcing its applicability. Additionally, the significance levels of the t-tests for both AB and OGT are less than.05, demonstrating that each variable significantly contributes to explaining the variance in student engagement and indicating that neither variable can be omitted from the model (Table 12).

Table 12
The number ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	50.985	2	25.492	120.944	.000[b]
	Residual	46.793	222	.211		
	Total	97.778	224			

a. Dependent Variable: Student Engagement
b. Predictors: (Constant), AB, OGT

The variance inflation factor (VIF) of 1.900, being below the threshold of 2, indicates an absence of multicollinearity, ensuring that the regression coefficients are reliable and

not distorted by high intercorrelations among the predictors. Collectively, these statistical indicators affirm the robustness of the regression model and underscore the significant roles of LSI in enhancing student engagement (Table 13).

Table 13
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.828	.203		4.079	.000		
	AB	.232	.057	.258	4.033	.000	.526	1.900
	OGT	.534	.066	.520	8.123	.000	.526	1.900

a. Dependent Variable: Student Engagement

In short, the findings reinforce the importance of creating a supportive and engaging classroom environment where students feel valued, motivated, and connected to the teaching-learning process.

DISCUSSION

Students exhibit high levels of lecturer-student interaction in class, despite no significant differences observed among students across different academic years or fields of study. However, this lack of differentiation indicates that interaction with lecturers remains consistent across various groups. These findings may pave the way for new research directions to explore other factors that could influence this issue. Furthermore, they can contribute to the development or adjustment of teaching methods and the attention that lecturers pay to students, ultimately enhancing student engagement and interest, thereby improving the overall quality and effectiveness of teaching and learning activities.

This study also finds a high correlation between lecturer-student interaction in class and student engagement. According to the findings, whenever LSI is close, students will demonstrate a higher level of concentration and put more effort into completing learning tasks. This finding aligns with studies on the influence of lecturer-student interaction on student engagement. On the other hand, the impact of lecturer-student interaction on students' online learning engagement further reinforces this study's findings. Lecturer-student interaction exerts a significantly positive influence on online learning engagement (Liu et al., 2022) and promotes students' learning engagement (Sun et al., 2022).

With the scope of the feature "the attention of lecturers to each individual and their language, gestures, and behaviors used in the classroom," Reyes et al. (2012) indicated that student engagement depends on how teachers promote classroom interactions. Students who experienced high levels of warmth and support or low levels of conflict in lecturer-student interactions had better achievement (Wang & Neihart, 2015). Lecturer-student interaction plays a crucial role in enhancing student engagement. When lecturers provide good instructions and close interactions, students are more willing to participate in the class and learning process (DeVito, 2016).

The interaction between lecturers and students significantly influences student engagement (Howe, 2019; Yulhendri et al., 2022). Lecturers sustain a harmonious rapport with students by paying attention to students' needs, individualism, and self-learning. With the proper use of teaching tools and the mutual relationship between lecturers and students in the teaching-learning session, students can directly access information to increase curiosity, interest, creativity, and motivation to learn (Yulhendri et al., 2022).

A favorable lecturer-student interaction can have a positive impact on student behavior in the classroom and initiate an active learning environment. This environment enhances the joy of learning and positive relationships, which can help maintain student interest and active engagement in learning. Research demonstrates a connection between teacher-student interaction and academic motivation, specifically autonomous motivation (Maulana et al., 2014). Students felt more connected and engaged in learning and became more successful academically (Reyes et al., 2012). The lecturer-student interaction not only promotes personal development, values, and attitudes, but it also builds intimate personal ties with other students, intellectual progress, and interest in ideas, as well as fulfilling intellectual stimulation (Leonard et al., 2024). In contrast, Obenza and Obenza (2023) discovered that there is a lack of meaningful connections between teachers and students, resulting in a low score for lecturer-student interaction. This deficiency in interaction leads to reduced student engagement and a decreased commitment to academic achievement, especially in modular learning.

The discussion above supports the idea that lecturers who build strong relationships and close associations with their students can encourage student engagement in academic pursuits, thereby enhancing the success of the teaching-learning process. Curriculum designers, lecturers, and educational administrators should establish favorable conditions for active and sustainable lecturer-student interaction by providing accurate and timely assessments, demonstrating support and care, selecting engaging teaching materials, using effective language, implementing active and experiential teaching methods, and more. These conditions could provide lecturers and students with excellent opportunities to establish harmonious interaction and sustainable student engagement.

CONCLUSION

Lecturer-student interaction in the classroom is a fundamental component of the teaching-learning process. Lecturer-student interaction influences student engagement, thereby increasing motivation and interest in learning and improving academic performance. This study explored the impact of lecturer-student interaction on student engagement at a public university in Vietnam. The statistical results revealed that three components of lecturer-student interaction include (1) the lecturer's attention to each individual and their language, gestures, and behaviors used in the classroom; (2) the lecturer's orientation, guidance, and teaching methods; and (3) the learning environment that influences students' interest and learning behavior (student engagement). Therefore, developing strong lecturer-student interactions will lead to increased student

interest and positive learning behavior. When lecturers genuinely care and spend time with them during class, student engagement increases.

Although the findings are relatively positive, there are still several limitations to this study. Firstly, only a public university in the south conducted this study, leaving out universities in the north and central regions of Vietnam. As a result, the findings of this study are insufficient to represent all educational institutions in Vietnam. Secondly, despite the easily observable differences in characteristics and traits between the two main groups of student populations, namely engineering students and non-engineering students, this study fails to sufficiently observe these dissimilarities. These differences may potentially influence the findings. Finally, this study focuses solely on questionnaires, with no case studies or interviews, which prevents the researchers from gaining in-depth knowledge of participants and deep responses to complex questions.

The following section provides suggestions for future research:

- Study the impact of lecturer-student interaction on student engagement in diverse university types, including public, private, and foreign institutions, in different regions of Vietnam and across specific academic disciplines.
- Examine how lecturer-student interaction influences student involvement in a variety of online learning environments, including online, hybrid, and blended learning.
- Investigate the distinctions between lecturer-student interaction's influence on engineering and non-engineering student engagement, and then devise appropriate instructional strategies to improve their academic performance.
- Investigate the factors that influence lecturer-student interaction and students in face-to-face learning and online learning.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

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APPENDIX 1

QUESTIONNAIRE ON UNIVERSITY LECTURER-STUDENT INTERACTIONS IN CLASS AND STUDENTS' ENGAGEMENT (Original version)

Dear participants,

This questionnaire is to investigate your interaction with your lecturer and assess your engagement in learning. You need to express opinions towards the features of those clusters that make you feel comfortable to choose. Your response will be anonymous and confidentially guaranteed.

For each sentence, tick the number corresponding to your response - Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly Agree = 5

Do you wish to participate in this study?

☐ Yes, I am consenting to participate

☐ No, I am NOT consenting to participate

Part 1. Lecturer – Student interaction in class

No.	Items	Scale				
Attention of lecturers and their language, gestures, and behaviours						
A1	My lecturer is aware of my needs and learning styles.	1	2	3	4	5
A2	My lecturer uses non-verbal cues such as eye contact and body language to engage with me during lectures.	1	2	3	4	5
A3	My lecturer uses warm language and rarely uses violence in class.	1	2	3	4	5
A4	My lecturer remembers and properly calls my name during class.	1	2	3	4	5
A5	My lecturer often changes methods and ways to communicate with me and my classmates.	1	2	3	4	5
A6	My lecturer provides personalized feedback or support to me during class activities.	1	2	3	4	5
Orientation, Guidance, and Teaching Methods						
O1	My lecturer provides clear instructions at the beginning of each class session.	1	2	3	4	5
O2	My lecturer often uses interactive teaching methods such as group discussions or hands-on activities.	1	2	3	4	5
O3	My lecturer encourages my participation in activities during class.	1	2	3	4	5
O4	My lecturer provides easy and interesting examples or demonstrations to clarify complex concepts or theories.	1	2	3	4	5
O5	My lecturer delivers assignments or activities around current events and real-world issues.	1	2	3	4	5
O6	My lecturer offers different activities to encourage our skills such as critical thinking and problem-solving skills.	1	2	3	4	5
O7	My lecturer offers different activities to encourage interactions between lecturer and students.	1	2	3	4	5
O8	My lecturer encourages us to raise questions in class.					
O9	My lecturer encourages us to give feedbacks to others' work.	1	2	3	4	5
Learning Environments						
L1	My lecturer promotes a positive and respectful atmosphere for open communication and discussion.	1	2	3	4	5
L2	My lecturer encourages students' collaboration and teamwork.	1	2	3	4	5
L3	The atmosphere in my class is warm and welcoming.	1	2	3	4	5
L4	My lecturer often uses technology or multimedia resources to enhance our learning experience.	1	2	3	4	5
L5	My lecturer often creates interesting surprises in class.	1	2	3	4	5

Part 2. Students' engagement

No.	Items	Scale				
Emotion						
E1	I look forward to the days with my favourite subjects.	1	2	3	4	5
E2	I like competitive intellectual discussions with my teachers, and share my thoughts or opinions	1	2	3	4	5
Behaviour						
B1	I usually maintain eye contact with my lecturer and show attentive body language.	1	2	3	4	5
B2	I usually raise my hands when there are questions from my lecturer.	1	2	3	4	5
B3	I like and actively participate in games or classroom activities.	1	2	3	4	5
B4	I work with other students outside class to prepare assignments.	1	2	3	4	5
B5	I actively participate in group work, discussions, or collaborative projects, demonstrating my ability to work well with my friends.	1	2	3	4	5
B6	I use my lecturer's support to help with personal/non-academic problems.	1	2	3	4	5
Cognition						
C1	I ask a lot of questions in class, such as clarifying questions, critical awareness questions, comparison questions, reflective questions, etc.	1	2	3	4	5
C2	I effectively tackling complex problems or tasks by applying knowledge and skills to find solutions or explore new ideas.	1	2	3	4	5
C3	I usually think critically to analyse information, make connections between matters, and sometimes seek clarification or further information about the discussed topic.	1	2	3	4	5

Part 3: Personal information

1. Which year are you in?
o 1st year
o 2nd year
o 3rd year
o 4th year
2. What is your gender?
o Male
o Female
3. Which major are you in?
o Technology and Engineering
o Civil Engineering & Construction
o Economics
o Foreign languages
4. Your GPA is
o Under 5.0
o 5.0 – under 6.0
o 6.0 – under 7.0
o 7.0 – under 8.0
o 8.0 and above

---------- This is the end of the questionnaire. Thank you for your collaboration! ----------

APPENDIX 2

QUESTIONNAIRE ON UNIVERSITY LECTURER-STUDENT INTERACTIONS IN CLASS AND STUDENTS' ENGAGEMENT

(After conducting the Exploratory Factor Analysis)

Dear participants,

This questionnaire is to investigate your interaction with your lecturer and assess your engagement in learning. You need to express opinions towards the features of those clusters that make you feel comfortable to choose. Your response will be anonymous and confidentially guaranteed.

For each sentence, tick the number corresponding to your response - Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly Agree = 5

Do you wish to participate in this study?

☐ Yes, I am consenting to participate

☐ No, I am NOT consenting to participate

Part 1. Lecturer – Student interaction in class

No.	Items	Scale				
Attention and behaviours of lecturers						
A1	My lecturer is aware of my needs and learning styles.	1	2	3	4	5
A2	My lecturer remembers and properly calls my name during class.	1	2	3	4	5
A3	My lecturer often changes methods and ways to communicate with me and my classmates.	1	2	3	4	5
A4	My lecturer often creates interesting surprises in class.	1	2	3	4	5
A5	The atmosphere in my class is warm and welcoming.	1	2	3	4	5
Orientation, Guidance, and Teaching Methods						
O1	My lecturer provides personalized feedback or support to me during class activities.	1	2	3	4	5
O2	My lecturer provides clear instructions at the beginning of each class session.	1	2	3	4	5
O3	My lecturer often uses interactive teaching methods such as group discussions or hands-on activities.	1	2	3	4	5
O4	My lecturer encourages my participation in activities during class.	1	2	3	4	5
O5	My lecturer provides easy and interesting examples or demonstrations to clarify complex concepts or theories.	1	2	3	4	5
O6	My lecturer delivers assignments or activities around current events and real-world issues.	1	2	3	4	5
O7	My lecturer offers different activities to encourage interactions between lecturer and students.	1	2	3	4	5
O8	My lecturer encourages us to raise questions in class.					
O9	My lecturer promotes a positive and respectful atmosphere for open communication and discussion.	1	2	3	4	5
O10	My lecturer encourages students' collaboration and teamwork.	1	2	3	4	5
O11	My lecturer often uses technology or multimedia resources to enhance our learning experience.	1	2	3	4	5
O12	My lecturer encourages us to give feedbacks to others' work.	1	2	3	4	5

Part 2. Students' engagement

No.	Items	Scale				
Interest						
I1	I look forward to the days with my favourite subjects.	1	2	3	4	5
I2	I like competitive intellectual discussions with my teachers, and share my thoughts or opinions	1	2	3	4	5
I3	I actively participate in group work, discussions, or collaborative projects, demonstrating my ability to work well with my friends.	1	2	3	4	5
Behaviour						
B1	I ask a lot of questions in class, such as clarifying questions, critical awareness questions, comparison questions, reflective questions, etc.	1	2	3	4	5
B2	I effectively tackling complex problems or tasks by applying knowledge and skills to find solutions or explore new ideas.	1	2	3	4	5
B3	I usually think critically to analyse information, make connections between matters, and sometimes seek clarification or further information about the discussed topic.	1	2	3	4	5
B4	I usually raise my hands when there are questions from my lecturer.	1	2	3	4	5
B5	I use my lecturer's support to help with personal/non-academic problems.	1	2	3	4	5

Part 3: Personal information

1. Which year are you in?
   - o 1st year
   - o 2nd year
   - o 3rd year
   - o 4th year
2. What is your gender?
   - o Male
   - o Female
3. Which major are you in?
   - o Technology and Engineering
   - o Civil Engineering & Construction
   - o Economics
   - o Foreign languages
4. Your GPA is
   - o Under 5.0
   - o 5.0 – under 6.0
   - o 6.0 – under 7.0
   - o 7.0 – under 8.0
   - o 8.0 and above

---------- This is the end of the questionnaire. Thank you for your collaboration! ----------