

Technology-Enhanced Language Learning and Engagement: Discord, Collaborative Learning, and E-Portfolio among Indonesian ELE Students

 <https://doi.org/10.31004/jele.v11i5.3256>

*Pandu Prasodjo, Inne Dasilva Angel, Leil Badrah Zaki^{abc}

¹²³Internasional Batam, Batam, Indonesia

Corresponding Author: pandu@uib.ac.id

ABSTRACT

Digital learning environments have expanded how English Language Teaching students communicate, collaborate, and document their learning beyond the classroom, yet the rationale for why such practices matter for engagement is often left implicit. This study examined the relationships between students' learning engagement and three aspects of a Discord-based e-portfolio environment—Discord within Technology-Enhanced Language Learning, collaborative learning, and e-portfolio use—among 42 English Language Education students in Batam, Indonesia. A quantitative correlational design was used, with data collected through a five-point Likert questionnaire previously validated in a pilot study. All three relationships were positive, strong, and statistically significant: Discord/TELL ($r = .787$), collaborative learning ($r = .710$), and e-portfolio use ($r = .878$), all $p < .001$, with e-portfolio use showing the strongest association. These findings indicate that Discord, collaborative learning, and e-portfolio practices are each meaningfully associated with—though not shown to causally determine—students' learning engagement in ELT.

Keywords: *Discord, Collaborative Learning, E-Portfolio, Students' Learning Engagement, English Language Teaching*

Article History:

Received 31st August 2026

Accepted 16th October 2026

Published 22nd October 2026



INTRODUCTION

In recent years, digital learning environments have become increasingly significant in English Language Teaching (ELT) as technology continues to reshape instructional practices and students' participation in the learning process (Hidayati & Slamet, 2025). Marsevani et al. (2024) and Prasodjo & Ponto (2023) reported that interactive multimedia delivered through a learning management system enhanced student engagement and learning outcomes in an English reading comprehension course, while Selfa-Sastre et al. (2022) emphasized that digital technologies can promote collaborative creativity and interaction in language education. In the Indonesian EFL context, ICT-integrated English language teaching has also been recognized as an important direction for supporting digital literacy and adapting language learning practices to contemporary educational needs (Zaki et al., 2024). These developments are particularly relevant for contemporary university students, who increasingly learn within technology-mediated environments that emphasize interaction, participation, and digital literacy (Hasumi & Chiu, 2024).

Within digital learning environments, students' learning engagement is an important aspect of the educational process, reflecting the extent to which students actively participate, invest effort, maintain interest, and cognitively involve themselves in learning activities. Engagement is a well-established construct in educational research: Hariono & Yoenanto (2024) conceptualize it as a meta-construct comprising behavioral, emotional, and cognitive dimensions that jointly determine the quality of a student's participation, and argue that engagement is malleable—that is, responsive to features of the learning environment rather than fixed. This malleability is the theoretical premise of the present study: if engagement

responds to environmental features, then specific, purposefully designed practices such as Discord-mediated communication, collaborative learning, and e-portfolio use are plausible levers for strengthening it, and each is examined here for the distinct psychological function it is theorized to serve (sustained interaction, positive interdependence, and reflective self-monitoring, respectively). In online learning contexts specifically, these dimensions collectively shape how students participate in and respond to learning experiences (Abbasi et al., 2024). However, maintaining students' engagement in technology-mediated learning remains a challenge. Conventional learning management systems (LMS), although useful for organizing course materials and assignments, may offer limited opportunities for continuous social interaction and authentic communication among students (Cao, 2023). Consequently, there is a need to examine learning environments and practices that may be associated with stronger student engagement.

Discord within Technology-Enhanced Language Learning (TELL)

One digital platform that has increasingly received attention in educational contexts is Discord. Originally developed as a communication platform for gaming communities, Discord has been adapted for educational purposes because of its flexible, community-oriented features (Prasodjo & Ponto, 2023). Theoretically, Discord's relevance to engagement can be explained through the Community of Inquiry framework (Garrison et al., 1999; González-Ramírez & García-Hernández, 2022), which holds that meaningful learning in a computer-mediated environment depends on sustained social presence (the ability of participants to project themselves as "real" to one another) and cognitive presence (the ongoing construction of meaning through interaction). Applied to Discord, this means its features are not engaging by virtue of novelty alone but because each supports one of these presences directly: text and voice channels sustain social presence by keeping communication continuous rather than confined to scheduled class time, file sharing supports cognitive presence by keeping shared artifacts and feedback persistently accessible, and role-management tools structure who is responsible for responding to whom, reducing the diffusion of responsibility that can otherwise suppress participation in group channels (Kruglyk et al., 2021; Wahyuningsih & Baidi, 2021). Previous studies indicate that Discord can facilitate communication, feedback exchange, and interaction among students in blended and online English-learning environments (Munibi et al., 2024; Uong et al., 2022; Yuniar et al., 2024), and within the Indonesian context specifically, Ramadhan et al. (2025) found that students responded positively to Discord as a medium for practicing speaking, citing its informality and accessibility as reasons for sustained use; Lauricella et al. (2024) similarly highlighted Discord's potential to support continuous communication and community-building in higher education more broadly. Discord can therefore be positioned within Technology-Enhanced Language Learning (TELL) the broader use of digital technologies to support language teaching and learning as a tool that provides a technology-mediated environment for English language learning (Hasumi & Chiu, 2024).

In the present study, Discord functions as the digital infrastructure for a class e-portfolio: each student is assigned a private text channel that serves simultaneously as a communication space and a personal repository for learning artifacts, while instructors access each channel to monitor progress and provide feedback. Through this structured use, Discord functions not only as a communication platform but also as a digital learning space in which students interact with peers and instructors throughout the learning process. Consistent with the malleability premise outlined above, the present study does not assume that the use of Discord automatically improves engagement merely because it affords more frequent contact; rather, Discord/TELL is examined empirically as one of the variables to determine whether students' actual experiences with the platform not their access to it alone are significantly related to their learning engagement.

Collaborative Learning in ELT

In addition to digital platforms, collaborative learning represents an important component of student-centered ELT. Collaborative learning refers to an instructional approach in which students work together toward shared academic goals through interaction, interdependence, discussion, and collective responsibility; effective collaborative learning is characterized by positive interdependence, individual accountability, promotive interaction, and peer feedback (P. Utomo et al., 2024). Its relevance to engagement is grounded in Vygotsky (1978) sociocultural theory, which holds that higher cognitive functions develop first through social interaction before being internalized individually, and in social interdependence theory (Simanjuntak et al., 2024), which specifies that positive interdependence students perceiving that they succeed only if their peers also succeed is what converts mere group contact into promotive interaction, effort, and engagement. In ELT contexts, collaboration is particularly important because language learning requires opportunities for interaction, negotiation of meaning, and feedback from others (Elvyra et al., 2024; Ginting, 2021). Empirical work in EFL settings supports this relevance: Alzubi et al. (2024) found that a collaborative-learning intervention facilitated English learning and social interaction through teamwork and peer communication, while Wahyurianto & Sylvia (2024) reported that collaborative reading activities improved comprehension and were perceived by students as enjoyable and motivating.

Kaur et al. (2023) found that technology-enabled language learning was associated with greater peer communication and collaborative activity, and (Su & Zou, 2022), reviewing research on technology-enhanced collaborative language learning, identified a range of digital tools and pedagogical benefits associated with such collaboration. Chim et al. (2024) further reported that both face-to-face and online collaborative tutorials could support deeper cognitive processing among learners, suggesting that the medium through which collaboration occurs does not diminish its relevance to language learning. In the present study, collaborative learning is embedded within the Discord-based e-portfolio through peer commenting on shared artifacts, responses to reflective posts, and small-group discussion, and is examined as a variable to determine whether students' experiences of peer interaction, shared responsibility, and feedback are significantly related to their learning engagement.

E-Portfolio in ELT

A further practice relevant to student engagement is the use of e-portfolios digital collections of students' academic work, learning artifacts, and reflections accumulated over time that allow learners to document their progress, revise their work, and receive feedback. Digital portfolios have been associated with learner autonomy and digital competence in higher education (Mogas et al., 2023), and portfolio-based assessment has been shown to encourage self-evaluation and active participation in EFL writing classes (Tyas, 2020). These studies establish a link between e-portfolio use and autonomy or self-evaluation broadly; more directly relevant to engagement itself, Kusuma et al. (2021) reported preliminary evidence linking educational e-portfolios specifically to students' self-efficacy and engagement, while Syairofi & Waluyo (2024) found that electronic-portfolio-based writing instruction supported peer feedback, communication, and collaborative participation among EFL learners.

More directly related to engagement, Kusuma et al. (2021) examined an online EFL speaking course that used e-portfolios and found that students demonstrated behavioral, affective, and cognitive engagement while completing e-portfolio-based tasks, conceptualizing engagement multidimensionally rather than as mere task completion. Similarly, Pourdana & Tavassoli (2022) examined e-portfolio assessment among EFL learners in a genre-based writing course and identified behavioral involvement through repeated writing and revision, emotional experiences such as enjoyment and reduced anxiety, and cognitive engagement through reflection on feedback. In an Indonesian public-speaking context, Khairil Akbar et al. (2026) similarly reported that teachers relied on e-portfolios to make students' progress visible to themselves over time, which teachers linked to sustained

participation. These studies provide direct empirical support for examining e-portfolio use in relation to multidimensional learning engagement. In the present study, the e-portfolio is implemented through Discord: each student's private channel functions as a personal space for collecting written assignments, reflective entries, and other learning artifacts, and e-portfolio use is examined as a variable to determine whether students' experiences of documenting, reviewing, and reflecting on their learning are significantly related to their engagement.

Students' Learning Engagement in ELT

Students' learning engagement refers to the degree to which students are actively involved, interested, and cognitively invested in the learning process. [Iswinarti & Surahman \(2022\)](#), in an influential synthesis of the engagement literature, treat engagement as a meta-construct spanning behavioral, emotional, and cognitive dimensions; some subsequent work has further distinguished a social dimension reflecting the quality of a learner's interpersonal participation, but because the present instrument does not sample social engagement as a distinct construct, this study follows the original tripartite formulation. Accordingly, engagement is understood here through behavioral engagement (observable participation, such as attendance, task completion, and contribution to activities), emotional engagement (affective responses such as interest, enjoyment, and a sense of belonging), and cognitive engagement (the mental effort students invest in understanding material, reflecting on feedback, and connecting new information to prior knowledge). [Abbasi et al. \(2024\)](#) underscore the multidimensional nature of EFL learners' engagement in online contexts, and this multidimensional view is adopted here to capture how students' experiences with Discord/TELL, collaborative learning, and e-portfolio use may relate to their behavioral, emotional, and cognitive involvement in English learning.

Research Gap and the Present Study

Although Discord, collaborative learning, and e-portfolios have each received considerable attention in educational research, previous studies have generally examined them separately and for different purposes. Studies on Discord have frequently focused on communication, motivation, and students' learning experiences through technology-mediated environments ([Pasaribu et al., 2025](#); [Ridho et al., 2021](#); [D. T. P. Utomo & Ahsanah, 2022](#)), research on collaborative learning has emphasized peer interaction and learning outcomes ([Kumalasari, 2023](#); [Ningsih, 2024](#)) and e-portfolio studies have commonly focused on reflection, learner autonomy, and assessment ([Ali et al., 2025](#); [Aprianti & Winarto, 2021](#); [Wardani et al., 2025](#)). Few studies, however, have examined these three aspects together within a single ELT context in relation to students' learning engagement, and existing evidence on collaborative learning and engagement indicates that learning interaction and peer collaboration contribute to students' active involvement, although the strength of these relationships may vary depending on the learning context and instructional design ([Ningsih, 2024](#)). This gap is not merely a matter of breadth: because Discord, collaborative learning, and e-portfolio are frequently implemented together in practice as they are in the present course, where all three are mediated through the same platform, evaluating them in isolation risks over- or under-stating each practice's association with engagement relative to what students actually experience in an integrated environment. This inconsistency, together with the limited integration of Discord, collaborative learning, and e-portfolio within a single design, motivates the present study.

Therefore, this study examines the relationships between students' learning engagement and three aspects of a Discord-based e-portfolio learning environment among English Language Education (ELE) students at a private university in Batam, Indonesia: Discord within Technology-Enhanced Language Learning (TELL), collaborative learning, and e-portfolio use. Rather than testing the effectiveness or causal influence of these practices, the study adopts a correlational perspective to determine whether students' experiences with

Discord/TELL, collaborative learning, and e-portfolio use are significantly associated with their level of learning engagement. Based on this purpose, the study addresses the following research questions:

Is there a significant relationship between students' learning engagement and Discord within Technology-Enhanced Language Learning (TELL)?

Is there a significant relationship between students' learning engagement and collaborative learning?

Is there a significant relationship between students' learning engagement and e-portfolio use?

Corresponding to these questions, three null and alternative hypotheses are tested: (H01/Ha1) there is/is not a significant relationship between students' learning engagement and Discord/TELL; (H02/Ha2) there is/is not a significant relationship between students' learning engagement and collaborative learning; and (H03/Ha3) there is/is not a significant relationship between students' learning engagement and e-portfolio use. Theoretically, the study is expected to clarify how three distinct but related practices within a single Discord-based e-portfolio environment relate to students' behavioral, emotional, and cognitive engagement. Practically, the findings may help ELT educators design learning environments particularly Discord-based e-portfolio implementations that support student participation, and may help students recognize how their own use of digital platforms, collaboration, and reflective documentation relates to their engagement in learning.

METHOD

This study employs a quantitative correlational research design to examine the relationships between students' learning engagement and three aspects of a Discord-based e-portfolio environment: Discord within Technology-Enhanced Language Learning (TELL), collaborative learning, and e-portfolio use. Quantitative research is appropriate because data are collected in numerical form through a structured questionnaire and analyzed statistically to identify patterns and relationships among the variables. A correlational, rather than an experimental, design was specifically selected for two reasons. First, Discord/TELL, collaborative learning, and e-portfolio use in this course are naturally occurring, non-manipulable features of students' ongoing coursework rather than a treatment that could ethically or practically be withheld from a control group; withholding these established, integrated practices to create a comparison group would have altered the course itself. Second, the study's purpose is to establish whether and how strongly these variables are associated with engagement as a prerequisite for any future experimental work, not to test a specific pedagogical intervention. The study therefore does not involve experimental manipulation or treatment; rather, it examines students' existing learning experiences within their ongoing English Language Teaching (ELT) coursework. Accordingly, the study is descriptive correlational in nature and focuses on statistical relationships among variables rather than causal claims.

In line with the study's research variables, Students' Learning Engagement is treated as the primary variable (X) against which each of the three learning-environment variables—Discord/TELL (Y1), Collaborative Learning (Y2), and E-Portfolio (Y3)—is separately correlated. Because Pearson product-moment correlation is a symmetric measure of association, this X/Y labeling is adopted for organizational and reporting purposes—for example, to distinguish the three correlation pairs summarized in Table 4—rather than to imply a causal or directional relationship between the variables.

Respondents

This study used total sampling (a full-population census), in which every member of a small, clearly defined population is included rather than a subset drawn through probability or purposive procedures. This research is conducted at a private university in Batam, Indonesia. Batam is a strategic border and industrial city geographically close to Singapore

and Malaysia, with strong exposure to international trade, tourism, and multicultural interaction; English proficiency accordingly plays an important role in students' academic development and future employability in the region. The participants comprise all English Language Education (ELE) students from Batch 2023 and Batch 2024 enrolled in the courses English Phonology and Statistics for Language Research. As Table 1 shows, the total number of participants is 42 students, comprising 22 students from Batch 2023 and 20 students from Batch 2024. Because all students in the two courses are involved, this study adopts a full-population (census) approach, which is appropriate for a small, accessible, and clearly defined population. All participants had at least one semester of prior exposure to Discord and e-portfolio tasks through the same coursework, which qualified them to report on their experience with both practices; more granular demographic characteristics (e.g., age, gender distribution, and prior English-learning background) were not captured by the instrument used in this study and are noted as a scope limitation in the Conclusions.

Table 1. Research Participants

Batch	Course	Number of Students
2023	Statistics for Language Research	22
2024	English Phonology	20
Total		42

Instruments

Data were collected using a questionnaire consisting of closed-ended statements measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree; Table 2). The questionnaire is organized around Discord/TELL (Y1), Collaborative Learning (Y2), and E-Portfolio (Y3), covering students' experiences of communication and interaction through Discord, peer interaction and shared responsibility in collaborative learning, and documentation, review, and reflection through e-portfolio use, respectively. Within each of these three sections, one item explicitly asks students to rate their overall engagement arising from that practice (e.g., "Overall, using Discord increases my engagement in the learning process"); the three engagement-worded items (one per section) were combined into the Students' Learning Engagement (X) scale used in the correlation analysis, while the remaining nine items in each section served as that section's own Y1-Y3 score, so that no single item was used on both sides of a given correlation. Table 3 presents the full item blueprint.

Table 2. Likert Scale Description

Score	Description
5	Strongly Agree
4	Agree
3	Neutral
2	Disagree
1	Strongly Disagree

Questionnaire items were developed and adapted from the constructs and previous studies reviewed above, with each item formulated to represent an indicator of its respective variable. Before the questionnaire was administered to the main sample, a pilot study was conducted with 50 English Language Education students from other universities across Indonesia respondents who shared similar characteristics to the target participants but were not included in the final sample in order to examine item validity and reliability; the results of this pilot study are reported in the Findings and Discussion section.

Table 3. Questionnaire Item Blueprint (Discord/TELL, Collaborative Learning, and E-Portfolio)

No	Variable	Item
1	Discord/TELL	Using Discord encourages me to participate actively in learning activities.
2	Discord/TELL	Discord makes it easier for me to communicate with my lecturer and classmates about learning materials.
3	Discord/TELL	Learning activities through Discord help me pay more attention to the lesson.
4	Discord/TELL	Using Discord increases my motivation to participate in the learning process.
5	Discord/TELL	Discord encourages me to interact more frequently with my classmates during learning activities.
6	Discord/TELL	Discord helps me access learning materials and information more easily.
7	Discord/TELL	I feel more confident expressing my ideas or asking questions through Discord.
8	Discord/TELL	Notifications and discussions on Discord encourage me to respond promptly to learning activities.
9	Discord/TELL	Discord encourages me to explore additional learning resources independently.
10	Discord/TELL	Overall, using Discord increases my engagement in the learning process.
11	Collaborative Learning	Collaborative learning encourages me to participate actively in learning activities.
12	Collaborative Learning	Working with classmates increases my interaction during the learning process.
13	Collaborative Learning	Collaborative learning encourages me to share my ideas and opinions with others.
14	Collaborative Learning	Group learning makes me feel responsible for completing learning tasks.
15	Collaborative Learning	Working collaboratively increases my motivation to learn.
16	Collaborative Learning	Discussions with classmates help me understand learning materials more deeply.
17	Collaborative Learning	Collaborative learning encourages me to participate in solving learning-related problems.
18	Collaborative Learning	Working with classmates increases my confidence in expressing my opinions.
19	Collaborative Learning	Collaborative activities help me remain focused on learning tasks.
20	Collaborative Learning	Overall, collaborative learning increases my engagement in the learning process.
21	E-Portfolio	Creating an e-portfolio encourages me to participate actively in learning activities.
22	E-Portfolio	The e-portfolio encourages me to reflect on what I have learned.
23	E-Portfolio	The e-portfolio helps me monitor my learning progress.
24	E-Portfolio	Managing my e-portfolio increases my responsibility for my own learning.
25	E-Portfolio	The e-portfolio motivates me to improve the quality of my work.
26	E-Portfolio	Using an e-portfolio helps me set clear learning goals.
27	E-Portfolio	The e-portfolio helps me organize my assignments and learning evidence systematically.
28	E-Portfolio	Feedback on my e-portfolio encourages me to improve my learning performance.

29	E-Portfolio	The e-portfolio helps me recognize my strengths and areas that need improvement.
30	E-Portfolio	Overall, using an e-portfolio increases my engagement in the learning process.

Note: Each item is rated on the five-point scale in Table 2 (1 = Strongly Disagree to 5 = Strongly Agree). The Students' Learning Engagement (X) section follows the same response format and covers behavioral, emotional, and cognitive indicators of engagement.

Procedures

Data collection followed two main steps. First, the questionnaire was developed based on the operational definitions of Discord/TELL, Collaborative Learning, and E-Portfolio described above, with items adapted from indicators drawn from the reviewed literature. Second, the questionnaire was created using Google Forms and distributed online through students' Discord channels and WhatsApp groups, allowing participants to complete it at their convenience within the data-collection window.

Ethical Considerations

Prior to participation, all students provided digital informed consent. Participation was voluntary, and participants were informed that their identities would remain anonymous. Data were analyzed in aggregated form to maintain confidentiality and to comply with ethical standards in educational research.

Data analysis

Data obtained from the questionnaire were analyzed quantitatively using statistical software. Prior to the main analysis, the data underwent a normality test for each variable Students' Learning Engagement (X), Discord/TELL (Y1), Collaborative Learning (Y2), and E-Portfolio (Y3) to determine whether Pearson product-moment correlation, a parametric test, was appropriate; a significance value greater than .05 indicates normally distributed data, whereas a value below .05 indicates non-normal distribution. An F-test was then conducted to examine the overall statistical significance of each relationship, using a significance level of .05.

The main the main analysis used bivariate Pearson product-moment correlation to examine the relationship between Students' Learning Engagement and each of the three learning-environment variables separately: Students' Learning Engagement and Discord/TELL (RQ1), Students' Learning Engagement and Collaborative Learning (RQ2), and Students' Learning Engagement and E-Portfolio (RQ3; Table 4). The Pearson correlation coefficient (r) indicates the direction and strength of each relationship, and statistical significance was evaluated at the .05 level. Spearman's rank-order correlation was additionally computed for each pair as a robustness check. After the three correlations were obtained, the coefficients were compared to identify which of the three variables showed the strongest association with students' learning engagement; this comparison focused on the direction, strength, and statistical significance of each relationship rather than on causal effects.

Table 4. Data Analysis Techniques

Research Question	Variables Analyzed	Data Source	Analysis Technique
RQ1: Is there a significant relationship between students' learning engagement and Discord/TELL?	Students' Learning Engagement (X) and Discord/TELL (Y1)	Questionnaire	Normality test, F-test, Pearson correlation
RQ2: Is there a significant relationship between students' learning engagement and collaborative learning?	Students' Learning Engagement (X) and Collaborative Learning (Y2)	Questionnaire	Normality test, F-test, Pearson correlation

RQ3: Is there a significant relationship between students' learning engagement and e-portfolio use?

Students' Learning Engagement (X) and E-Portfolio (Y3)

Questionnaire

Normality test, F-test, Pearson correlation

FINDINGS AND DISCUSSION

Instrument Validity and Reliability (Pilot Study)

Prior to the main data collection, a pilot study was conducted with 50 English Language Education students from 43 different universities across Indonesia, in order to examine the validity and reliability of the 30-item questionnaire before it was administered to the 42 students in the main sample. Item validity was examined using the corrected item-total correlation, in which each item's score was correlated with the sum of the remaining items within its construct; an item was considered valid if its corrected item-total correlation exceeded the critical value for the sample size ($r\text{-table} = .279$ for $n = 50$, $\alpha = .05$, two-tailed). As Table 5 shows, all 30 items across the three constructs exceeded this threshold (item-total r ranging from .575 to .870), indicating that every item was a valid indicator of its intended construct and that none required revision or removal.

Reliability was examined using Cronbach's alpha for each construct. The Discord/TELL scale demonstrated excellent internal consistency ($\alpha = .939$), as did Collaborative Learning ($\alpha = .947$) and E-Portfolio ($\alpha = .960$). All three constructs therefore exceeded the conventional threshold for excellent reliability ($\alpha > .90$), and the questionnaire was administered to the main sample without further modification.

Table 5. Pilot Study Instrument Validity and Reliability (N = 50)

Construct	Items	Item-Total r Range	Valid Items	Cronbach's α
Discord/TELL	10	.575 – .837	10 of 10	.939
Collaborative Learning	10	.691 – .862	10 of 10	.947
E-Portfolio	10	.770 – .870	10 of 10	.960

Descriptive Statistics and Preliminary Testing

The main sample consisted of 42 English Language Education students (22 from Batch 2023, 20 from Batch 2024). Table 6 presents the descriptive statistics for Students' Learning Engagement and the three learning-environment variables. On average, students reported the highest mean score for Collaborative Learning ($M = 3.96$, $SD = 0.60$), followed by Students' Learning Engagement ($M = 3.85$, $SD = 0.70$), and comparable mean scores for Discord/TELL ($M = 3.74$, $SD = 0.68$) and E-Portfolio ($M = 3.74$, $SD = 0.72$); all four variables clustered around the "agree" point of the five-point scale.

Prior to the correlation analysis, a Shapiro-Wilk normality test was conducted for each variable. Students' Learning Engagement ($W = .951$, $p = .073$), Discord/TELL ($W = .971$, $p = .369$), and E-Portfolio ($W = .947$, $p = .050$) did not deviate significantly from a normal distribution, while Collaborative Learning fell just below the conventional threshold ($W = .946$, $p = .048$). Because Pearson correlation is reasonably robust to minor deviations from normality at this sample size, and because the Collaborative Learning result was only marginally below .05, Pearson product-moment correlation was retained as the primary analysis for all three relationships, consistent with the Method; Spearman's rank-order correlation was additionally computed for each pair as a robustness check and is reported alongside the Pearson results below.

Table 6. Descriptive Statistics and Normality Test (N = 42)

Variable	M	SD	Min	Max	Shapiro-Wilk (p)
Students' Learning Engagement (X)	3.85	0.70	2.33	5.00	W = .951, p = .073
Discord/TELL (Y1)	3.74	0.68	2.00	5.00	W = .971, p = .369
Collaborative Learning (Y2)	3.96	0.60	2.89	5.00	W = .946, p = .048
E-Portfolio (Y3)	3.74	0.72	2.44	5.00	W = .947, p = .050

RQ1: Discord/TELL and Students' Learning Engagement

An F-test confirmed that the regression model relating Discord/TELL to students' learning engagement was statistically significant, $F(1, 40) = 65.10$, $p < .001$, $R^2 = .619$, indicating that variation in students' Discord/TELL experiences accounted for approximately 62% of the variance in their learning engagement. The Pearson product-moment correlation revealed a strong, positive, and statistically significant relationship between Discord/TELL and students' learning engagement, $r(40) = .787$, $p < .001$ (Spearman's $\rho = .823$, $p < .001$). Accordingly, H01 is rejected and Ha1 is accepted: there is a significant relationship between the use of Discord within Technology-Enhanced Language Learning and students' learning engagement among the ELE students in this study.

RQ2: Collaborative Learning and Students' Learning Engagement

The regression model relating collaborative learning to students' learning engagement was also statistically significant, $F(1, 40) = 40.77$, $p < .001$, $R^2 = .505$. A strong, positive, and statistically significant Pearson correlation was found between collaborative learning and students' learning engagement, $r(40) = .710$, $p < .001$ (Spearman's $\rho = .724$, $p < .001$). H02 is therefore rejected and Ha2 is accepted: there is a significant relationship between collaborative learning and students' learning engagement.

RQ3: E-Portfolio and Students' Learning Engagement

The regression model relating e-portfolio use to students' learning engagement was statistically significant, $F(1, 40) = 135.02$, $p < .001$, $R^2 = .771$. The Pearson correlation between e-portfolio use and students' learning engagement was strong, positive, and statistically significant, $r(40) = .878$, $p < .001$ (Spearman's $\rho = .884$, $p < .001$)—the strongest of the three relationships examined. H03 is therefore rejected and Ha3 is accepted: there is a significant relationship between e-portfolio use and students' learning engagement.

Table 7. Summary of Pearson Correlations Between Students' Learning Engagement and Each Predictor Variable

Relationship	r	R ²	F(1, 40)	p	Strength
Engagement - Discord/TELL (RQ1)	.787	.619	65.10	< .001	Strong
Engagement - Collaborative Learning (RQ2)	.710	.505	40.77	< .001	Strong
Engagement - E-Portfolio (RQ3)	.878	.771	135.02	< .001	Strong

Comparison of the Three Relationships

When the three correlation coefficients were compared, e-portfolio use showed the strongest association with students' learning engagement ($r = .878$), followed by Discord/TELL ($r = .787$), while collaborative learning showed the comparatively weakest—though still strong—association ($r = .710$). This pattern suggests that, within this Discord-based e-portfolio environment, the reflective and documentation-based activities central to e-portfolio use were more closely tied to students' overall engagement than either the platform's communication features or the peer-interaction activities examined separately.

Discussion

Before interpreting each relationship, it is worth distinguishing statistical from practical significance. With $p < .001$ for all three relationships, statistical significance is unambiguous; more informative for practice, however, is effect size. The R^2 values obtained here (.505 to .771) indicate that each predictor alone accounted for roughly half to over three-quarters of the variance in engagement scores effect sizes considerably larger than the .10–.25 range typically reported for single predictors of engagement in the broader literature (Fredricks et al., 2004) suggesting the associations are not only statistically detectable but educationally meaningful in this sample. This distinction matters because a small, statistically significant correlation can arise from sample size alone, whereas the magnitude of R^2 observed here is unlikely to be a sampling artifact.

The strong positive relationship between Discord/TELL and students' learning engagement corroborates previous research indicating that Discord's communication features text channels, voice channels, and file sharing support active participation and continuous interaction among students (Hakim & Muzaki, 2023; Huda, 2022). This finding is also consistent with Munibi et al. (2024) and Uong et al. (2022), who reported that Discord-based instruction was associated with greater engagement and more favorable perceptions of communication in EFL contexts, as well as with (Lauricella et al., 2024), who highlighted Discord's role in supporting continuous communication and community-building in higher education, and with (Ramadhan et al., 2025), who similarly found Indonesian students responded favorably to Discord as an accessible, informal medium for practicing English. In the present study, Discord additionally functioned as the infrastructure for students' private e-portfolio channels, which may partly explain why its relationship with engagement was almost as strong as that of e-portfolio use itself: for these students, using Discord and maintaining their e-portfolio were closely intertwined activities rather than fully separate experiences. Read through the Community of Inquiry lens introduced in the Introduction (Garrison et al., 1999), this pattern is consistent with social and cognitive presence reinforcing one another when they are anchored in the same platform rather than distributed across separate tools.

The significant, strong relationship between collaborative learning and students' learning engagement is consistent with (Nur Ashari et al., 2026; Wiranegara et al., 2026), both of whom reported that collaborative activities were associated with greater engagement in EFL classrooms, and with (Kaur et al., 2023), who found that technology-enabled collaboration supported peer communication and participation. At the same time, collaborative learning showed the comparatively weakest of the three relationships in this study, which resonates with (Bachtiar & Puspitasari, 2024), who found that collaborative learning was not directly related to engagement once peer support was accounted for. Viewed through social interdependence theory (Johnson & Johnson, 2009), a plausible explanation is that positive interdependence the mechanism theorized to convert group contact into engagement – may have been only partially realized here: within the Discord-based e-portfolio environment examined in this study, collaborative activities were embedded as peer commenting and small-group discussion around individually maintained e-portfolios, which centered accountability on each student's own artifact rather than on a jointly owned outcome. This is a comparatively looser form of interdependence than (Vygotsky, 1978) and Johnson & Johnson (2009) describe, and than collaborative learning implemented as a dedicated pedagogical strategy typically provides (Gillies, 2016), which may explain why its association with engagement, while still strong, was the weakest of the three.

The strongest relationship observed in this study was between e-portfolio use and students' learning engagement, consistent with (Ali et al., 2025; Aprianti & Winarto, 2021; Wardani et al., 2025), all of whom reported that e-portfolio activities were associated with behavioral, emotional, and cognitive engagement, and with (Khairil Akbar et al., 2026), who likewise observed that e-portfolios made students' progress visible to themselves in ways teachers linked to sustained participation. The comparatively large R^2 for this relationship

(77%) suggests that the reflective and documentation-based nature of e-portfolio activities collecting artifacts, monitoring progress, and responding to feedback may engage students more consistently than communication or peer-interaction activities alone, echoing (Devi Ariningsih et al., 2021; Yuza et al., 2024), who linked digital-portfolio practices to learner autonomy and active participation.

Taken together, these findings indicate that all three aspects of the Discord-based e-portfolio environment examined in this study Discord/TELL, collaborative learning, and e-portfolio use were significantly and strongly associated with students' learning engagement, supporting the conceptual framework outlined in the Introduction and extending previous research, which had generally examined these three practices separately (Chim et al., 2024; Munibi et al., 2024; Tyas, 2020), by considering them together within a single Discord-based e-portfolio design.

CONCLUSIONS

This study found significant positive associations between students' learning engagement and three aspects of a Discord-based e-portfolio environment: Technology-Enhanced Language Learning (TELL), collaborative learning, and e-portfolio use among 42 English Language Education students at a private university in Batam, Indonesia. Accordingly, all three null hypotheses were rejected. Theoretically, these findings extend previous research by examining the three practices within an integrated learning environment, supported by the Community of Inquiry framework and social interdependence theory. Practically, the results suggest that educators should combine digital communication, peer collaboration, and reflective e-portfolio activities to support student engagement, with e-portfolio use showing the strongest association. However, the correlational design does not establish causality. Other limitations include the small sample from a single institution, the absence of demographic data, and the use of a single-item measure of engagement within each variable section. Future research should employ longitudinal or experimental designs, develop an independent multidimensional engagement scale, collect demographic information, and involve larger, more diverse samples across multiple institutions to strengthen the validity and generalizability of the findings.

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