EFL SELF-REGULATED MOTIVATION AND INFORMAL DIGITALLEARNING OF ENGLISH (IDLE) FOR SPEAKING SKILLS IN HIGHER EDUCATION

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Abstract: This study investigated the influence of Self-Regulated Motivation (SRM) strategies on the frequency of Informal Digital Learning of English (IDLE) for speaking skills among EFL university students in Jakarta, Indonesia. Utilizing a predictive correlational design, data were collected from 152 undergraduate students through an online survey and semi-structured interviews. Multiple linear regression analysis revealed that SRM significantly predicts IDLE engagement (R^2 = 0.489$), with Regulation of Learning Environment identified as the strongest positive predictor (β = 0.479, p < 0.001). Notably, Task Value Activation exhibited a significant negative predictive relationship, suggesting that highly grade-oriented students may perceive informal digital practices as supplementary or secondary to formal academic sources. Qualitative thematic analysis further revealed that students utilize digital platforms—specifically Discord and interactive voice-chat applications—as "social learning bubbles" that provide necessary peer scaffolding for language development. These findings demonstrate that digital platforms function as vital extensions of the formal classroom. The study concludes by encouraging educators to integrate informal digital practices into formal curricula to bridge the gap between autonomous learning habits and academic proficiency.

Keywords: *Self-Regulated Learning, Self-Regulated Motivation, Informal Digital Learning of English, English as a Foreign Language, Speaking Skills.*

INTRODUCTION

Independent study at the university level is essential for enhancing metacognition and increasing learning effectiveness. This process encompasses managing one's thinking, engaging in self-reflection, and critically evaluating academic assignments(Kormos & Csizér, 2013, p. 276; Oportus-Torres et al., 2024, p. 9). As limited class time often restricts opportunities for deep conceptual understanding, students should increasingly extend their learning autonomously. Consequently, motivation serves as the primary driver for students to cultivate this essential independence. In this context, the integration of technology beyond the classroom offers a critical pathway for students to operationalize their self-regulation through instruction- andsocialization-oriented activities (Lai et al., 2023). Empirical evidence suggests that approximately 45.1% of the variation in self-regulated language learning can be attributed to these digital engagement patterns, highlighting the role of IDLE as a significant predictor of autonomous development (Fauziah & Novita, 2023). Furthermore, by enabling students to curate personalized learning environments, IDLE facilitates a transition toward self-directed language acquisition that persists independently of structured classroom instruction (Lee & Drajatı, 2019, p. 9; Zheng &Xiao, 2024, p. 12).

Self-Regulated Motivation (SRM) is a critical component for supporting student learning, enabling individuals to manage their speaking development through diverse subject topics and

resources (Kormos & Csizér, 2013). In the EFL context, academic success is frequently influenced by both extrinsic and intrinsic motivation(Cho et al., 2021, p. 3). A key alternative for developing speaking skills is Informal Digital Learning of English (IDLE). Through platforms such as Discord, WhatsApp, and interactive voice-chat applications, students engage in autonomous, interest-driven interactions that effectively bridge the gap between classroom theory and real-world communication(Dressman & Sadler, 2019, p. 4; Hamdan & Saripudin, 2023, p. 932).

Despite the potential of IDLE, research is needed to understand the specific relationship between EFL students' SRM and their engagement in informal digital speaking practices. Students often view these digital platforms as "social learning bubbles" (Greenhow & Lewin, 2015; Nikolov et al., 2015) yet the interaction between their academic motivation and these informal environments remains complex. Additionally, previous studies have established a link between motivation and digital engagement (Lee & Lee, 2020; Liu et al., 2023), but there remains a critical research gap in understanding how specific subscales of self-regulated motivation, particularly those related to environmental control, uniquely predict productive language outcomes like speaking in the Global South's digital ecology (Liu & Hossain, 2026; Zhang et al., 2025). Furthermore, current literature often overlooks the potentially conflicting relationship between formal task valuation and informal digital frequency (Zhang & Liu, 2022)

Therefore, the primary objective of this study is to investigate the predictive influence of SRM strategies on the frequency of IDLE for speaking skills among EFL university students. By examining how learners regulate their learning environment and peer interactions, this study aims toprovide empirical evidence for integrating informal digital practices into formal curricula to enhance autonomous language proficiency. Therefore, a research question was formulated: *To what extent do self-regulated motivation subscales collectively predict university students' engagement inInformal Digital Learning of English?*

METHOD

This study utilizes a quantitative predictive correlational research design. This non-experimental approach is appropriate for educational research when the goal is to describe and measure the degree of association between two or more variables without manipulating them (Creswell, 2014, p. 41; Zimbico & Manuel, 2021, p. 6). In this design, researchers use statistical tests to identify the extent to which independent variables (e.g., self-regulated motivation subscales) can predict a specific outcome (e.g., IDLE frequency)

To achieve the predictive objective, this study employs multiple regression analysis. This statistical technique is widely used in language learning research to analyze complex relationships and determine the collective strength of multiple independent variables in predicting a single criterion measure (Al-Hoorie, 2018, p. 725; Creswell, 2014, p. 41). By regressing IDLE frequency on the subscales of self-regulated motivation, this study can quantify the percentage of variance explained (represented by R^2) and identify the unique contribution of each predictor through beta coefficients

The study involved 152 undergraduate EFL students at several higher education institutions in Jakarta, Indonesia. Participants were selected using purposive sampling to ensure they were active users of digital platforms for English learning. The sample comprised 107 female (70.4%) and 45 male (29.6%) students. The participants were enrolled across various semesters, with the largest concentrations represented by senior-level students in semester 8 (n= 25, 16.7%) and semester 6 (n= 19, 12.5%).

The data were collected using a closed-ended survey adapted from Alotumi (2021). The Self-Regulated Motivation (SRM) Scale measured four scales (*Task Value Activation, Regulationof Learning Environment, Regulation of Affect,* and *Regulation of Peers*) on a 5-point Likert scale. The IDLE for Speaking skills scale consisted of 12 items evaluating the frequency of students' informal, out-of-class digital English speaking practices. The instrument's validity was assessed using Pearson's Product-Moment Correlation (r). Items were considered valid if the calculated correlation exceeded the r-table threshold ($r > 0.334$). Reliability was tested using the Cronbach alpha coefficient ($\alpha = 0.93$), confirming the instrument was reliable for data collection.

Data Analysis

The raw data set was cleaned and formatted using Microsoft Excel (using descriptive statistical functions), where individual question items were aggregated into composite mean scores for each of the five core research variables. Statistical analyses were executed using computer software to complete the sequences. Phase 1 included an assessment of internal consistency using Cronbach's alpha coefficients. This step was important to ensure that the measurement scales used for the study were reliable and consistent across different items. Phase2 involved computing descriptive statistics, means, and standard deviations to create baseline learner profiles. This analysis provided insights about the general characteristics of the participants and their performance levels. Phase 3 involved the assessment of statistical assumptions for linear modeling. This included tests for multicollinearity by variance inflation factors (VIF). This is important to ensure that the predictor variables in the model were notoverly correlated, which would otherwise compromise the validity of the regression analysis.

Finally, Phase 4 was the running of a Multiple Linear Regression model, under the simultaneous entry method. In this phase, the overall model fit (R^2), statistical significance (F-value), and individual predictive power (standardized $\boldsymbol{\beta}$) of the Self-Regulated Motivation (SRM) types on IDLE speaking outcomes were calculated. This detailed analysis provided a better understanding of the correlations among the variables and their influence on speaking performance. To facilitate the statistical analysis, including Cronbach's alpha reliability testing and multiple linear regression modeling, the researcher utilized Google Gemini (an AI-powered assistant) to generate and verify statistical procedures. All outputs were manually reviewed and validated by the researchers to ensure accuracy and alignment with the study's objectives.

Table 1: Validity Test Result

The researcher calculated the validity test is used as a measuring tool to test the validityof the *Self-Regulated EFL Motivation Questionnaire in Informal Digital Learning English Speaking in the context of higher education.*

VALIDITY TEST RESULT			
Nq	**Rxy**	**Rtable**	**Status**
1	**0.41**	0.3338	**VALID**
2	**0.47**	0.3338	**VALID**
3	**0.56**	0.3338	**VALID**
4	**0.33**	0.3338	**VALID**
5	**0.46**	0.3338	**VALID**
6	**0.60**	0.3338	**VALID**
7	**0.43**	0.3338	**VALID**
8	**0.56**	0.3338	**VALID**
9	**0.64**	0.3338	**VALID**
10	**0.67**	0.3338	**VALID**
11	**0.65**	0.3338	**VALID**
12	**0.44**	0.3338	**VALID**
13	**0.66**	0.3338	**VALID**
14	**0.41**	0.3338	**VALID**
15	**0.70**	0.3338	**VALID**
16	**0.51**	0.3338	**VALID**
17	**0.72**	0.3338	**VALID**
18	**0.47**	0.3338	**VALID**
19	**0.54**	0.3338	**VALID**
20	**0.66**	0.3338	**VALID**
21	**0.48**	0.3338	**VALID**
22	**0.68**	0.3338	**VALID**
23	**0.76**	0.3338	**VALID**
24	**0.84**	0.3338	**VALID**
25	**0.72**	0.3338	**VALID**

The data presented in this discussion results from the answers of 152 participants outside the sample, with 25 questions divided into two constructs: the first construct, totaling 13 questions, and the second construct, totaling 12 questions. Validity of the sample data from the modified data instrument, and in addition, it has also been checked from the original instrument. The significant r-table df N-2 (0.05) was used to examine the reliability of sample items.

Table 2: Reliability Test Result

The reliability test was carried out after the questionnaire was declared valid. This aims todetermine EFL self-regulated motivation in Informal Digital Learning of English for speaking in a higher Education context, which can be trusted as a data collection tool and is feasible to use.

The reliability test in this study used Cronbach Alpha, in which the questionnaire was said to bereliable the Cronbach Alpha was use > 0.6. The following is data:

Research Construct / Subscale	Number of Items	Cronbach's Alpha (α)	Internal Consistency Status
Regulation of Affect (RA)	4	0.646	Acceptable for adapted scales
Task Value Activation (TVA)	6	0.678	Acceptable
Regulation of Learning Environment (RLE)	5	0.786	Good / Highly Reliable
Regulation of Peers (RP)	2	0.663	Acceptable
Informal Digital Learning of English (IDLE)	12	0.9	Highly Reliable

Based on the results of the table above, it can be concluded that the reliability test on the instrument from the study of Self-Regulated EFL Motivation in Informal Digital Learning Speaking English in the context of higher education is declared reliable with more significant Cronbach Alpha coefficient value, with a result of 0.93> 0.6.

Table 3: Descriptive Statistic Quantitative

Variable	N	Mean	SD	Minimum	Maximum
Task Value Activation (Mean_TVA)	152	4.4	0.44	3	5
Regulation of Learning Environment (Mean_RLE)	152	4.1	0.69	1.6	5
Regulation of Affect (Mean_RA)	152	4.04	0.6	2	5
Regulation of Peers (Mean_RP)	152	4.04	0.82	1	5
Informal Digital Learning of English (Mean_IDLE)	152	3.79	0.77	1.5	5

FINDINGS AND DISCUSSION

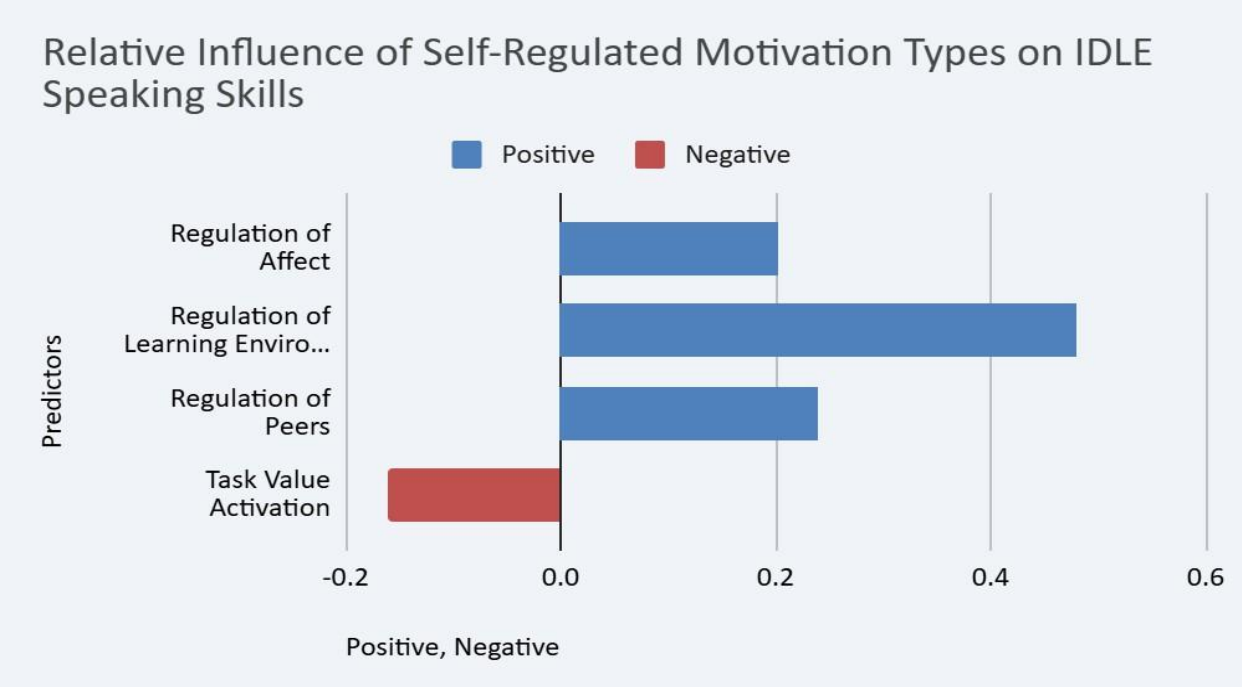
Descriptive analysis of the survey responses revealed that participants generally demonstrated high levels of self-regulated motivation (SRM) and frequent engagement in Informal Digital Learning of English (IDLE). The Task Value Activation subscale yielded the highest mean score (M = 4.40, SD = 0.44), indicating that students highly value the purpose of their English

learning. This was followed by Regulation of Learning Environment (M = 4.10, SD = 0.69), Regulation of Affect (M = 4.04, SD = 0.60), and Regulation of Peers (M = 4.04, SD = 0.82). Regarding the dependent variable, students reported consistent engagement in informal digital speaking practices (M = 3.79, SD = 0.77).

A Multiple Linear Regression analysis was conducted to determine the predictive impact of the four SRM subscales on IDLE speaking skills. The overall model was statistically significant ($p < .001$) and explained approximately 48.9% of the variance in IDLE speaking outcomes ($R^2 = 0.489$). The results of the regression coefficients are presented in Table 4.

Table 4. The Result of Regression Cooefficient

Predictor Variable	Standardized β	t-value	p-value
Regulation of Affect	0.203	3.071	0.003
Task Value Activation	-0.161	-2.493	0.014
Regulation of Learning Env.	0.479	6.431	< 0.001
Regulation of Peers	0.240	3.435	< 0.001



The analysis indicates that Regulation of Learning Environment is the strongest positive predictor of IDLE speaking habits (β = 0.479, p < 0.001), suggesting that students who actively manage their learning surroundings are most likely to practice English informally. Regulation of Peers (β = 0.240) and Regulation of Affect (β = 0.203) also positively influence digital speaking practice. Interestingly, Task Value Activation showed a significant negative predictive relationship (β = -0.161, p = 0.014), which warrants further discussion in the following section.

The Relationship between Self-Regulated Motivation (SRM) and IDLE

The data support that Regulation of Learning Environment (RLE) is the main driver of speaking habits, Informal Digital Learning of English (Fauziah & Novita, 2023; Yot-Domínguez & García, 2017). This implies that the digital environment, that is, platforms like Discord and OME TV, is a virtual extension of the formal classroom in particular, blurring the boundaries between institutional and personal learning spaces (Bruen & Erdocia, 2024; Greenhow & Lewin, 2015). This is consistent with the quantitative finding that students are deliberately constructing their digital space to support speaking practices. Participants clearly pointed out that these platforms are important in connecting the dots between theory in class and practice in the real world: "To practicespeaking English by using an application to communicate with friends or new people… it is enoughto practice my English skills" (A2) (Dressman & Sadler, 2019; Hamdan & Saripudin, 2023).

The results of this study provide strong evidence that SRM is a significant predictor of English speaking frequency in informal digital settings. The model explained 48.9% of the variance, which indicated that motivation is not only a precursor to classroom learning but also a powerful force for autonomous digital language practices. These findings are consistent with the theory of that learners with higher self-regulation skills are more capable of controlling the unstructured nature of digital learning environments (Lier, 2010, p. 4; Long & Kim, 2024, p. 3; Maghfiroh et al., 2023, p. 52). These data suggest that the more students regulate their ownaffective states and learning environments, the more they seek opportunities for IDLE, turning passive consumption of digital media into active speaking practice.

Peer Scaffolding and Community

The quantitative analysis revealed that regulation of the learning environment was the strongest positive predictor of IDLE speaking habits (β = 0.479). This implies that the "digital environment"—namely the likes of Discord, OME TV, and online gaming communities—acts as a virtual extension of the formal classroom. This is consistent with our qualitative findings, where participants described creating their own 'learning bubbles' online. For example, A2 identified that "the system makes it easier to talk when playing games with outsiders," which suggests that students are intentionally building their environments to facilitate speaking practice (Long & Kim, 2024, p. 14; Naser, 2024, p. 81).

Similarly, the positive predictive power of Regulation of Peers (β = 0.240) suggests that learning is socially constructed. This is supported by the interview data, where students use these apps not for "study" in the traditional sense but for "interaction." The social aspect of these platforms provides the peer scaffolding to keep motivation high, showing that IDLE is best when it is a social activity and not a lonely one.(Almohesh & Al-Tamimi, 2024, p. 7; Guo et al., 2022, p.

993227). The regression analysis showed that Regulation of Peers (β = 0.240) was a significant positive predictor. This confirms motivation as being socially constructed. In our interviews, participants commented that their digital platforms (e.g. Discord) offer the necessary "peer scaffolding" to maintain speaking motivation, as they often coordinate game strategies or discuss shared hobbies: "The Discord application allows for easier communication when playing games with outsiders. We chat, share our hobbies, and plan our game strategies on voice chat" (A2). In these communities, students reduce the pressure to be perfect and instead focus on the usefulness of the language for interaction.(Cherrez, 2021, p. 8; Ilmi et al., 2022, p. 132; Lauricella et al., 2024; Long & Kim, 2024, p. 11).

The Nuance of Task Value Activation (TVA)

An unexpected finding in this study was the significant negative predictive relationship between task value activation and IDLE speaking frequency (β = -0.161). While typically a positive trait for academic performance, in the context of informal learning, high TVA may actually inhibit digital practice. A possible explanation for this, as suggested by participant A4, is that students with high Task Value Activation may prioritize formal, "official" campus material over informal, "irregular" digital sources. This aligns with existing research highlighting the "tension" between students' informal digital practices and the prevailing cultural bias in academic settings toward more structured, representational forms of knowledge (Chan et al., 2014, p. 111). It is possible that students who are highly focused on grades and official assignments perceive informal digitalactivities as less "valid" or even as a distraction from their primary academic responsibilities, leading them to dedicate less time to these unofficial digital spaces (Bruen & Erdocia, 2024, p. 87; Chan et al., 2014, p. 111).

Interestingly, the regression revealed a significant negative relationship between Task Value Activation and IDLE engagement (β = -0.161). While typically a positive academic trait, students with high TVA may prioritize formal, "official" campus material over "irregular" digital sources. One participant clarified this tension, noting that while digital apps are useful, they are viewed as supplementary rather than central: "I said it can't be used as the main source... the campus or knowledge from the subject is the main source... but because my hobby is highly correlated, it serves as helpful material to complement each other" (A4) (Cress & Kalthoff, 2023, p. 418;Staddon, 2023, p. 40). This suggests that for some students, high academic focus leads them to viewinformal digital practice as less "valid" than their official lecture materials, explaining the negative correlation in the data.

Practical Implications for Higher Education

The outcomes of this research offer significant practical implications for the field of EFL instruction. Given that the regulation of learning environments and peer interaction serve as robust indicators of proficiency development, educators must reevaluate social media and gaming communities, moving beyond viewing them as mere diversions. The focus should shift toward a strategic effort to "bridge the gap" between structured academic settings and these autonomous digital realms. Higher education practitioners might facilitate student reflection on IDLE habits—such as articulated gaming tactics or community engagements—framing them as valid pedagogical

exercises. By validating and integrating these informal digital practices within the formal curricula, institutions can assist learners with lower task value activation in perceiving the tangible academic merit and communicative utility inherent in their virtual social interactions.(Supraptiningsih & Aji, 2026; Zhang et al., 2025, p. 26).

CONCLUSION AND SUGGESTION

The objective of this study was to examine how Self-Regulated Motivation (SRM) strategies influence EFL students' engagement with Informal Digital Learning of English (IDLE) for speaking skills. The findings confirm that SRM is a critical driver of autonomous digital learning; students who effectively regulate their learning environments and engage with peers aresignificantly more likely to utilize digital platforms to practice speaking English. Conversely, the negative relationship observed between Task Value Activation and IDLE engagement suggests a potential conflict for students who prioritize formal academic tasks over informal practice,indicating that the value assigned to "learning" differs between classroom and digital settings.

This study underscores that digital platforms—such as Discord and interactive voice-chat applications—act as vital social extensions of the formal classroom, providing the safe, peer-scaffolded environments necessary for language development. Educators are encouraged to view these digital practices not as distractions, but as legitimate, student-led opportunities for speaking proficiency. Integrating these informal practices into formal curricula could help bridgethe gap between academic requirements and autonomous learning habits.

While this research provides valuable insights, it is limited by its focus on a specific population in Jakarta. Further research is recommended to explore whether these digital learning habits persist in underdeveloped regions with less stable internet infrastructure, as well as to investigate longitudinal changes in motivation as students transition from formal university settings to professional environments.

REFERENCES

Al-Hoorie, A. H. (2018). The L2 motivational self system: A meta-analysis. Studies in Second Language Learning and Teaching, 8(4), 721–754. https://doi.org/10.14746/ssllt.2018.8.4.2

Almohesh, A. R. I., & Al-Tamimi, J. (2024). Wow, I cannot stop: a concentration on vocabulary learning via instagram and its effects on informal digital learning of english, technostress, and on-line engagement. BMC Psychology, 12(1).https://doi.org/10.1186/s40359-023-01503-w

Bruen, J., & Erdocia, I. (2024). Formal and informal foreign language learning at university: blurring the boundaries. Language Learning Journal, 53(1), 84–97. https://doi.org/10.1080/09571736.2024.2306157

Chan, N. N., Walker, C., & Gleaves, A. (2014). An exploration of students' lived experiences of using

smartphones in diverse learning contexts using a hermeneutic phenomenologicalapproach. Computers & Education, 82, 96–106.https://doi.org/10.1016/j.compedu.2014.11.001

Cherrez, N. J. (2021). Leveraging asynchronous speaking tasks to promote willingness and confidence to speak in Spanish: A qualitative study. Australasian Journal of Educational Technology, 1–14. https://doi.org/10.14742/ajet.6657

Cho, H. J., Melloch, M. R., & Levesque-Bristol, C. (2021). Enhanced student perceptions of learning and performance using concept-point-recovery teaching sessions: a mixed-method approach. International Journal of STEM Education, 8(1). https://doi.org/10.1186/s40594-021-00276-1

Cress, T., & Kalthoff, H. (2023). Hybrid Imbalance: Collaborative Fabrication of Digital Teaching and Learning Material. Qualitative Sociology, 46(3), 403–428. https://doi.org/10.1007/s11133-023-09539-5

Creswell, J. W. (2014). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.

http://bvbr.bib-bvb.de:8991/F?func=service&doc_library=BVB01&local_base=BVB01&doc_number=009878305&sequence=000002&line_number=0001&func_code=DB_RECORDS&service_type=MEDIA

Dressman, M., & Sadler, R. W. (2019). Multimodality and Language Learning. In The Handbookof Informal Language Learning. John Wiley & Sons Ltd. . https://doi.org/10.1002/9781119472384

Fauziah, F., & Novita, D. (2023). Exploring Students' Informal Digital Learning of English (IDLE) and Self-Regulated Language Learning from a Sociocultural Perspective. Indonesian TESOL Journal, 5(2), 197–214. https://doi.org/10.24256/itj.v5i2.4225

Greenhow, C., & Lewin, C. (2015). Social media and education: reconceptualizing the boundaries of formal and informal learning. Learning Media and Technology, 41(1), 6–30. https://doi.org/10.1080/17439884.2015.1064954

Guo, F., Zhang, Y., & Wu, Z. (2022). Mobile-assisted vocabulary learning through the Shanbay App outside the classroom: Effects of self-regulation and peer scaffolding. Frontiers in Psychology, 13, 993224–993224. https://doi.org/10.3389/fpsyg.2022.993224

Hamdan, A. H., & Saripudin, M. (2023). Designs for research, teaching, and learning: A framework for future education. Innovations in Education and Teaching International, 60(5), 795–796. https://doi.org/10.1080/14703297.2023.2241319

Ilmi, M., Drajatı, N. A., & Putra, K. A. (2022). Linking the theory and practice: self-reflections on technology-integrated English grammar teaching. Reflective Practice, 24(2), 125–136. https://doi.org/10.1080/14623943.2022.2146080

Kormos, J., & Csizér, K. (2013). The Interaction of Motivation, Self-Regulatory Strategies, and

Autonomous Learning Behavior in Different Learner Groups. TESOL Quarterly, 48(2), 275–299. https://doi.org/10.1002/tesq.129

Lai, C., Chen, Q., Wang, Y., & Qi, X. (2023). Individual interest, self-regulation, and self-directed language learning with technology beyond the classroom. British Journal of Educational Technology, 55(1), 379–397. https://doi.org/10.1111/bjet.13366

Lauricella, S., Craig, C. D., & Kay, R. (2024). Examining the Benefits and Challenges of Using Discord in Online Higher Education Classrooms. Journal of Educational Informatics, 4(2), 20–31. https://doi.org/10.51357/jei.v4i2.225

Lee, J. S., & Drajatı, N. A. (2019). Affective variables and informal digital learning of English: Keys to willingness to communicate in a second language. Australasian Journal of Educational Technology. https://doi.org/10.14742/ajet.5177

Lee, J. S., & Lee, K. (2020). The role of informal digital learning of English and L2 motivationalself system in foreign language enjoyment. British Journal of Educational Technology, 52(1), 358–373. https://doi.org/10.1111/bjet.12955

Lier, L. van. (2010). The ecology of language learning: Practice to theory, theory to practice. Procedia - Social and Behavioral Sciences, 3, 2–6. https://doi.org/10.1016/j.sbspro.2010.07.005

Liu, G., & Hossain, M. K. (2026). What Predicts (AI -Mediated) Informal Digital Learning of English in the Global South? The Case of Rural Bangladeshi Students. Journal of ComputerAssisted Learning, 42(2). https://doi.org/10.1002/jcal.70196

Liu, G., Zhang, Y., & Zhang, R. (2023). Examining the relationships among motivation, informal digital learning of English, and foreign language enjoyment: An explanatory mixed-method study. ReCALL, 36(1), 72–88. https://doi.org/10.1017/s0958344023000204

Long, L., & Kim, M. (2024). It is like a friend to me: Critical usage of automated feedback systems by self-regulating English learners in higher education. Australasian Journal of Educational Technology. https://doi.org/10.14742/ajet.8821

Maghfiroh, A., Styati, E. W., Fachriza, A., Khoiriyah, K., Simpol, W., Syaputra, R. A., & Lathifah, L. (2023). Future-Ready Educators: Assessing Digital Competence and Teaching Preparedness Among Prospective Teachers in the 21st Century. Indonesian Journal on Learning and Advanced Education (IJOLAE), 6(1), 47–61. https://doi.org/10.23917/ijolae.v6i1.23081

Naser, K. (2024). Tech-Enhanced Learning. International Journal of Interactive Mobile Technologies (iJIM), 18(6), 67–83. https://doi.org/10.3991/ijim.v18i06.46187

Nikolov, D., Oliveira, D. F. M., Flammini, A., & Menczer, F. (2015). Measuring online social bubbles. PeerJ Computer Science, 1. https://doi.org/10.7717/peerj-cs.38

Oportus-Torres, R., Contreras-Soto, Y., Sanhueza-Campos, C., Albornoz, J. M., Pérez-Villalobos, C., & Quintanilla-Espinoza, A. (2024). Self-regulated learning and engagement through emergency remote teaching in EFL undergraduate students. Frontiersin Education, 9.

https://doi.org/10.3389/feduc.2024.1416507

Staddon, R. V. (2023). Exploring Higher Education Students' Perspectives on Factors Affecting Use, Attitudes and Confidence with Learning Technologies. International Journal of Instruction, 16(2), 31–52. https://doi.org/10.29333/iji.2023.1623a

Supraptiningsih, N., & Aji, I. S. (2026). The Low Connection Between Informal Digital Learning of English and Willingness to Communicate: Investigating the "Scrolling Phenomenon" and Speaking Challenges among EFL Vocational Students. Journal of Pragmatics Research, 8(1), 347–377. https://doi.org/10.18326/jopr.v8i1.347-377

Yot-Domínguez, C., & García, C. M. (2017). University students' self-regulated learning using digital technologies. International Journal of Educational Technology in Higher Education, 14(1). https://doi.org/10.1186/s41239-017-0076-8

Zhang, H., Du, L., Luo, S., Xun, H., Yang, A., & Tang, Y. (2025). Unlocking EFL achievement through informal digital learning: the mediating roles of anxiety and enjoyment among school-age students in the Chinese mainland. Asian-Pacific Journal of Second and Foreign Language Education, 10(1). https://doi.org/10.1186/s40862-025-00352-x

Zhang, Y., & Liu, G. (2022). Revisiting informal digital learning of English (IDLE): a structural equation modeling approach in a university EFL context. Computer Assisted Language Learning, 37(7), 1904–1936. https://doi.org/10.1080/09588221.2022.2134424

Zheng, Y., & Xiao, A. (2024). A structural equation model of online learning: investigating self-efficacy, informal digital learning, self-regulated learning, and course satisfaction. Frontiers in Psychology, 14. https://doi.org/10.3389/fpsyg.2023.1276266

Zimbico, O. J., & Manuel, A. (2021). The Methodological Consistency of Master's of Education Dissertations at Eduardo Mondlane University (2013 - 2018). International Journal ofAfrican Higher Education, 8(3), 1–23. https://doi.org/10.6017/ijahe.v8i3.14157