DEVELOPING A DIGITAL LITERACY-BASED EFL LEARNING MODEL FOR SENIOR HIGH SCHOOL STUDENTS

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Abstrack

This study addresses the limited integration of digital literacy in English as a Foreign Language (EFL) classrooms, where instructional practices often emphasize language forms without fostering students' ability to critically engage with digital content. Despite the growing importance of digital literacy, there is still a lack of structured learning models that systematically integrate digital competencies with English learning outcomes. Therefore, this study aims to develop and evaluate a Digital Literacy-Based English Learning Model (DL-EFL) for senior high school students. This research employed a Research and Development (R&D) design using the ADDIE framework, consisting of analysis, design, development, implementation, and evaluation stages. The participants were 37 twelfth-grade students at Senior High School 1 Talawi. Data were collected through observations, interviews, questionnaires, and pretest posttest assessments. The data were analyzed using descriptive quantitative techniques, including validity, practicality, and effectiveness testing through Normalized Gain (N-Gain).The findings reveal that the existing integration of digital literacy in English learning was not optimal and lacked structured guidance. The developed DL-EFL model was validated as highly valid by experts and highly practical based on student responses. In terms of effectiveness, the model significantly improved students' learning outcomes, as indicated by an average N-Gain score of 0.74 (high category).his study contributes to the field of digital pedagogy by providing a structured and empirically validated learning model that integrates digital literacy into EFL instruction. The model offers practical guidance for teachers to design interactive, student-centered, and technology-enhanced learning environments, thereby supporting both language proficiency and digital competence in the digital era.

Keywords: *Digital Literacy, EFL Learning, Learning Model Development, ADDIE, Learning Outcomes*

INTRODUCTION

The rapid growth of internet use has significantly transformed English as a Foreign Language (EFL) learning by enabling students to access diverse digital resources beyond traditional textbooks. Recent empirical studies (2020–2025) highlight that technology-enhanced learning environments can improve students' engagement, autonomy, and language achievement when supported by well-structured instructional design. This shift allows learning to become more flexible, personalized, and student-centered, aligning with the demands of 21st-century education.

Despite these advancements, current classroom practices still predominantly focus on grammar and vocabulary drills, with limited integration of digital literacy skills such as evaluating, creating, and communicating through digital texts. Studies indicate that although students are frequently exposed to digital content, their interaction tends to remain superficial and

lacks critical language processing. This condition suggests that digital technology is often used as a supplementary tool rather than as an integral component of meaningful learning.

Teachers play a crucial role in determining the effectiveness of digital integration. However, recent findings reveal that teachers' readiness, technological competence, and pedagogical integration skills vary significantly. This inconsistency often leads to ineffective or fragmented use of digital tools in EFL classrooms. At the same time, digital literacy encompassing technical, cognitive, and sociocultural competencies—has become essential for students to critically evaluate information, construct meaning, and communicate effectively in digital environments. In the context of Senior High School 1 Talawi, students demonstrate high exposure to digital platforms but lack structured guidance in utilizing these tools for English learning. Additionally, teacher-centered instructional approaches still dominate classroom practices, limiting students' opportunities to actively engage with digital media. Empirical studies suggest that student-centered learning environments, supported by structured digital activities, scaffolding, and ethical awareness, can significantly enhance students' learning outcomes, critical thinking, and engagement.

However, there remains a significant research gap in the availability of a comprehensive and context-based learning model that systematically integrates digital literacy into EFL instruction at the senior high school level. Most previous studies focus on isolated digital tools or activities rather than developing a holistic instructional model grounded in strong theoretical frameworks. To address this gap, this study is grounded in constructivist learning theory, which emphasizes active knowledge construction through interaction and meaningful learning experiences. It also adopts the Technological Pedagogical Content Knowledge (TPACK) framework to ensure the alignment between technology, pedagogy, and content, as well as the SAMR model to evaluate the level of technology integration from substitution to transformation. These frameworks provide a solid foundation for developing an effective digital literacy-based EFL learning model. Based on this background, the research question of this study is: *How effective is a digital literacy–based English learning model in improving students' English learning outcomes at Senior High School 1 Talawi?* Accordingly, this study aims to determine the effectiveness of the developed model in enhancing students' English learning performance and digital competence.

METHOD

Development (R&D) approach to design, develop, and refine a digital literacy–based English learning model for senior high school students. The R&D method is selected as it integrates theoretical foundations with empirical validation, ensuring that the developed instructional model is both pedagogically sound and practically applicable. To strengthen the evidence of effectiveness, this study also incorporates a quasi-experimental design using a one-group pretest–posttest approach during the implementation phase. The research was conducted from October 2025 to February 2026 at Senior High School 1 Talawi, involving Grade XII-7 students. Participants included English teachers, students, and school administrators, providing comprehensive insights into classroom realities and digital learning practices. Data were collected from primary sources such as interviews, observations, audio recordings, and students' digital artifacts, as well as secondary sources including curriculum documents and school policies.

This study follows the ADDIE framework consisting of five phases. The analysis phase identifies students' digital

literacy levels and instructional gaps through interviews, observations, and questionnaires. The design phase formulates learning objectives, selects digital tools, and structures activities aligned with EFL and digital literacy competencies. The development phase produces the initial model (Prototype 1), which is validated by experts. The implementation phase applies the revised model (Prototype 2) in a limited classroom trial using a pretest–posttest design. Finally, the evaluation phase assesses validity, practicality, and effectiveness, leading to the final model (Prototype 3).

Instruments and Validation, Data are collected using interviews, observations, questionnaires, validation sheets, and assessment rubrics. Instrument validity is ensured through expert judgment, while reliability is measured using Cronbach's alpha (≥ 0.70). Data Collection Techniques, Data are obtained through interviews, observations, documentation, and questionnaires to ensure triangulation and data credibility. Data Analysis Data are analyzed using qualitative (coding and thematic analysis) and quantitative methods (pretest–posttest comparison, N-Gain, and t-test). Validity is ensured through triangulation, expert judgment, and member checking.

RESULT AND DISCUSSION

In the development stage, the model is transformed into a concrete product. This includes the creation of instructional syntax, digital learning materials, interactive media, and structured learning activities. Students are guided to search for information, analyze content, collaborate through digital platforms, and produce digital outputs such as videos or presentations. Assessment instruments are also developed to evaluate students' language skills and digital literacy, including rubrics for project-based tasks. In addition, teaching modules, worksheets, and teacher guidelines are prepared to support implementation.

Finally, the developed product undergoes expert validation to ensure its feasibility in terms of content, design, language, and instructional quality. This process aims to refine the model before it is applied in the classroom. Overall, this research highlights the importance of integrating digital literacy into English learning to create a more interactive, relevant, and effective learning environment that meets the demands of the digital era.

Table 1: Media/Design Expert Validation Results

Aspect	Indicator	Rating (1–4)
Content Quality	Accuracy, clarity, relevance	4
Instructional Design	Flow, coherence, and engagement support	4
Digital Literacy Integration	Alignment with digital literacy indicators	4
Interface & Media Design	Layout, interactivity, ease of use	4
Feasibility (Practicality)	Implementation and practicality in the classroom	3
Technical Functionality	Stability, accessibility, ease of use	4
Total Skor		23

Based on Table 1, the total score obtained from the media/design expert is 23 out of a maximum score of 24. This result can be converted into a percentage as follows: $\frac{23}{24} \times 100\% = 95.83\%$. This percentage indicates that the developed learning model falls into the category of Very Feasible. The findings show that the developed model has strong performance across all evaluated aspects.

Table 2: Student Engagement Observation Results

Indicator	Description	Rating (1–4)
Participation	Students actively respond, complete tasks, and follow instructions	4
Navigation	Students are able to operate platforms, tools, or digital media without difficulty	4
Collaboration	Students collaborate effectively during pair/group digital tasks	4
Attention	Students show attention to digital and multimedia learning activities	4
Motivation	Students demonstrate enthusiasm, curiosity, and sustained effort	4
Technical Response	Students are able to handle technical issues adaptively and independently	3

Based on the observation results, the level of student engagement in the learning process falls into the category of: "Very Good." The findings indicate that students demonstrated a very high level of engagement throughout the learning process

Table 3: List of Respondent Codes for the Large-Scale Trial

Kode	Nama
X1	A.P.S
X2	A.F
X3	A.F
X4	A.A
X5	A
X6	A.P
X7	A
X8	A.K
X9	B.S
X10	B.S
X11	C.S
X12	D.A.Z.P
X13	D.N
X14	D.R
X15	D.S.N
X16	F
X17	F.S.H
X18	F.S
X19	F.C.U
X20	L.S
X21	M.P
X22	M.A.F
X23	M.A.T
X24	M.A
X25	M.D.A
X26	M.H.A.L
X27	M.H
X28	M.A
X29	N.A.F
X30	P.S
X31	R.S
X32	S.A
X33	W

Table 4: Summative Evaluation Results

No	Kode	Pre test	Post test	Post-Pre	(100-Pre)	N-Gain	N-Gain (%)
1	X1	60	90	30	40	0.75	75.00
2	X2	70	90	20	30	0.67	66.67
3	X3	65	92	27	35	0.77	77.14
4	X4	60	95	35	40	0.88	87.50
5	X5	55	88	33	45	0.73	73.33
6	X6	50	88	38	50	0.76	76.00
7	X7	58	90	32	42	0.76	76.19
8	X8	58	92	34	42	0.81	80.95
9	X9	55	88	33	45	0.73	73.33
10	X10	65	90	25	35	0.71	71.43
11	X11	58	85	27	42	0.64	64.29
12	X12	60	95	35	40	0.88	87.50
13	X13	45	85	40	55	0.73	72.73
14	X14	60	88	28	40	0.70	70.00
15	X15	58	85	27	42	0.64	64.29
16	X16	50	88	38	50	0.76	76.00
17	X17	65	90	25	35	0.71	71.43
18	X18	50	85	35	50	0.70	70.00

No	Kode	Pre test	Post test	Post-Pre	(100-Pre)	N-Gain	N-Gain (%)
19	X19	50	87	37	50	0.74	74.00
20	X20	50	87	37	50	0.74	74.00
21	X21	68	90	22	32	0.69	68.75
22	X22	58	88	30	42	0.71	71.43
23	X23	50	85	35	50	0.70	70.00
24	X24	55	87	32	45	0.71	71.11
25	X25	55	85	30	45	0.67	66.67
26	X26	55	87	32	45	0.71	71.11
27	X27	50	87	37	50	0.74	74.00
28	X28	55	88	33	45	0.73	73.33
29	X29	58	88	30	42	0.71	71.43
30	X30	60	95	35	40	0.88	87.50
31	X31	65	92	27	35	0.77	77.14
32	X32	55	90	35	45	0.78	77.78
33	X33	58	88	30	42	0.71	71.43
Average Percentage						074	74%

Discussion, The findings of this study indicate that the Digital Literacy-Based English Learning Model (DL-EFL) significantly improves students' learning outcomes. This improvement is not merely statistical but can be explained pedagogically through the nature of the model itself. The model works effectively because it integrates digital literacy skills—such as accessing, evaluating, creating, and communicating information—into meaningful language learning tasks. This integration encourages students to actively construct knowledge rather than passively receive information, which aligns with constructivist learning principles. Furthermore, the effectiveness of the model can be attributed to its alignment with the TPACK framework, where technology is not used as an additional tool but as an integral part of pedagogy and content. The structured use of digital tools allows students to engage with authentic materials, collaborate with peers, and produce digital outputs, which enhances both language competence and digital skills. In terms of the SAMR model, the learning activities move beyond substitution toward modification and redefinition, enabling more transformative learning experiences.

Another key factor explaining the success of the model is the use of scaffolding and structured digital tasks. Students are guided step by step in interacting with digital content, which reduces cognitive overload and supports gradual skill development. This structured approach helps students transition from basic understanding to higher-order thinking, such as analyzing and evaluating digital information.

However, several limitations should be acknowledged. First, the study was conducted in a single class with a relatively small sample size, which may limit the generalizability of the findings. Second, differences in students' digital readiness and access to technology may have influenced the results. Third, the absence of a control group in the quasi-experimental design limits the ability to fully attribute improvements solely to the intervention. In addition, some unexpected findings emerged during the implementation. Although students were highly familiar with digital devices, not all of them demonstrated strong digital literacy skills, particularly in evaluating the credibility of online information. This suggests that frequent exposure to technology does not automatically translate into meaningful digital competence. Moreover, a few students initially experienced difficulties adapting to more student-centered and technology-integrated learning environments, indicating the need for gradual adaptation. When compared with previous studies, the findings of this study are consistent with research showing that digital-based learning can enhance engagement and learning outcomes. However, some studies report contradictory results, indicating that technology integration does not always lead to improvement, especially when it is not supported by clear instructional design or teacher readiness. This difference highlights that the effectiveness of digital learning depends not on the technology itself but on how it is pedagogically implemented. The broader implications of this study suggest that integrating digital literacy into EFL learning requires more than simply introducing digital tools. It requires a structured model that aligns learning objectives, digital competencies, and instructional strategies. For teachers, this model provides practical guidance for designing student-centered and technology-enhanced learning. For schools, it emphasizes the importance of supporting teacher training and digital infrastructure. For future research, it highlights the need to test the model in different

contexts and with more rigorous experimental designs.

CONCLUSION

This study concludes that the Digital Literacy-Based English Learning Model (DL-EFL) is effective in improving students' English learning outcomes and digital literacy skills. The integration of digital literacy components into structured EFL instruction enables students to engage more actively in learning, develop critical thinking, and produce meaningful digital content. The findings confirm that technology-enhanced learning can significantly improve both language proficiency and student engagement when supported by a well-designed instructional model. Theoretical Contribution, This study contributes to the field of digital pedagogy by providing an empirically validated learning model that integrates digital literacy into EFL instruction. It extends the application of constructivist learning theory, TPACK, and SAMR frameworks by demonstrating how these theories can be operationalized into a structured and practical instructional model in a senior high school context.

Limitations of the Study**,** Despite its contributions, this study has several limitations. First, it was conducted in a single class with a limited number of participants, which may affect the generalizability of the findings. Second, the use of a quasi-experimental design without a control group limits the ability to establish strong causal relationships. Third, variations in students' digital readiness and access to technology may have influenced the results. Implications for Policy and Practice, The findings have important implications for educational practice and policy. For teachers, the DL-EFL model provides practical guidance for implementing student-centered and technology-enhanced learning. For schools, it highlights the need to support digital infrastructure and continuous teacher training in digital literacy. At the policy level, integrating digital literacy into the curriculum is essential to prepare students for the demands of the digital era. Future Research Directions and Suggestions, Future research is recommended to expand this study by involving larger and more diverse samples to enhance generalizability. Researchers are also encouraged to apply experimental designs with control groups to provide stronger evidence of effectiveness. In addition, further studies may explore the long-term impact of digital literacy integration on students' learning outcomes and investigate the application of the model in different educational contexts or subject areas.

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