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Unlocking Bilingual Literacy: A Tech-Driven Approach to English Writing and Translation

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ABSTRACT

Using the socio-cognitive and CLT theoretical frameworks as lenses, this research investigates the implementation of technology-integrated learning tools to enhance bilingual literacy, specifically in English writing and translation. Employing a mixed-method descriptive design, the study involved 120 students from four Grade XI at SMKN 1 Jombang. Data were collected via online questionnaires containing both closed- and open-ended items. The results demonstrate that students frequently utilized applications such as Google Translate and Grammarly, particularly during the editing, revising, and meaning clarification stages. The majority acknowledged substantial improvements in lexical selection, grammatical precision, and translation comprehension. Despite this, several constraints were identified, including unstable internet access and limited familiarity with specific tools, underscoring the need for systematic support and instructional scaffolding. This study makes a pedagogical contribution by presenting an integrative framework that unites writing and translation within a technology-enhanced language-learning environment. The findings affirm the relevance of such an approach for vocational education settings, where practical communication skills are critical for both academic achievement and workforce readiness.

I. Introduction

The rapid digitalization of modern society has fundamentally altered the requirements of language proficiency. The integration of technology into language education has become not only inevitable but essential, particularly in enhancing bilingual literacy through English writing and translation. This pedagogical shift requires a move away from traditional monolingual perspectives toward a holistic view of biliteracy. Bilingual literacy, often termed biliteracy, encompasses all facets of communication in which two or more linguistic systems intersect through written text. It is not merely the ability to read and write in two languages independently, but rather the dynamic interaction between those languages during the process of meaning-making [1]. In this context, writing is not a solitary act but a translingual practice in which learners use their native language (L1) and target language (L2) as a unified repertoire to navigate complex tasks.

As digital platforms become more advanced and accessible, their pedagogical value in fostering learners' linguistic skills continues to grow. These tools, such as automated grammar checkers, mobile learning applications, and machine translation, provide multimodal scaffolding that can bridge the gap between a student's current proficiency and their target literacy goals. Furthermore, the need to integrate the tools into English instruction is grounded in the limitations of conventional teaching methods, which often rely on passive, grammar-heavy instruction and neglect learners' communicative competence [2], [3], [4]. Moreover, the urgency to adopt digital solutions has been accelerated by the post-pandemic shift toward hybrid learning environments, in which flexible, engaging, and learner-centered models are now prioritized [5], [6]. The emergence of interactive media, mobile learning applications, and AI-powered platforms offers transformative possibilities for

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EFL classrooms [7], [8], [9]. When integrated thoughtfully, such tools can facilitate not only linguistic development but also motivation, creativity, and learner autonomy.

Previous studies have demonstrated the effectiveness of technology in teaching writing. [10], [11], and [12] show that digital applications and flipped classroom strategies can significantly enhance writing performance, especially when embedded in collaborative and student-centered learning environments. [13], [14]. [15] also found that web-based and interactive platforms positively influence students' ability to organize ideas, revise drafts, and build sentence fluency. Tools such as Lectora Inspire and greeting card media [16] have been shown to improve writing outcomes in secondary settings by adding multimodal engagement. In addition to writing, translation instruction has similarly benefited from technological support. [17], [18], [19], [20] highlight the role of new media and machine learning in optimizing translation teaching by offering real-time examples, contextualized practice, and immediate feedback. [9], [21], and [22] argue that translation tools deepen students' understanding of linguistic equivalence, cultural nuance, and genre variation. These tools include automated translators, corpus-based software, and ethics-based translation comparisons.

However, most existing research focuses on university-level learners or general secondary school populations, without considering the vocational focus and technological readiness of vocational school students. Vocational school students face unique challenges: they are expected to acquire English proficiency that supports both academic success and vocational readiness, yet many lack confidence and exposure to real-world tasks [4]. Traditional resources seldom provide contextualized opportunities for them to apply language meaningfully. Besides, writing and translation are often taught as separate skills. This separation overlooks their interconnected nature in developing bilingual literacy, which requires learners to express and transfer meaning fluidly between languages. [23][4] observe that integrated approaches to writing and translation remain underexplored in second-language writing research, particularly in vocational education settings.

Moreover, there is an emerging tension between the efficiency of digital tools and the development of deep cognitive autonomy. While technology can expedite translation, it may also foster a passive dependence that undermines the critical evaluative skills essential to bilingual literacy. Moreover, [24][25] note that learners' attitudes toward translation tools and their strategic use of these tools are influenced by the extent to which such tools are meaningfully embedded in classroom instruction. Studies such as [26], [27], and [28] emphasize the importance of using relevant and accessible media, e.g., comics, films, and video-based content, to bridge language learning to learners' interests.

The integration of digital technology into English as a Foreign Language (EFL) pedagogy has been widely lauded for enhancing student writing performance and fostering learner autonomy [10]; [7]. However, a critical disconnect persists between the theoretical affordances of these tools and their practical implementation in specific vocational contexts. While previous research emphasizes the multimodal scaffolding provided by digital writing and translation technologies, there is a significant lack of empirical evidence regarding the autonomy paradox; the ease of technology may inadvertently lead to passive task completion rather than deep bilingual literacy. Furthermore, existing models, such as the Technology Acceptance Model (TAM), often overlook the roles of technical resilience and pragmatic Anxiety.

Therefore, this study emphasizes learner-centeredness and autonomy, allowing students to select, explore, and reflect on the digital tools they use. This aligns with the call for multimodal and personalized learning strategies advocated by Stevenson & Baker [29] and aligns with the constructivist approach described by [14]. Interactive learning, in which students construct meaning collaboratively and engage with real audiences, has been shown to build both motivation and language proficiency [30][31][4]. In constructing meaning, the cultural and ethical dimensions of translation are essential. Research by [32] and [33] reveals that exposing students to culturally sensitive texts and ethical translation tasks enhances their awareness of linguistic responsibility and intercultural communication. These dimensions are particularly relevant in vocational settings, where students may be required to communicate across cultures in business, tourism, or technology fields.

Consequently, there is an urgent need to investigate how the interaction between the utility of digital tools and student motivation influences the development of bilingual literacy. Without a clear understanding of these friction points, the transition to digital-based English pedagogy risks producing a generation of passive users rather than autonomous bilingual writers. Accordingly, the research questions are formulated as follows;

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(1) How do students perceive the effectiveness of specific digital tools across different stages of writing and translation?
(2) What primary challenges influence their motivation to use the technologies?

II. Literature Review

The theoretical construction of this study is anchored in the interaction between socio-cognitive and communicative language teaching (CLT) paradigms, which conceptualize language acquisition as a fluid negotiation between technological affordances, situational contexts, and learner agency. To explore this nexus, the following literature review provides a critical synthesis of three pivotal domains: the multidimensional continua of bilingual literacy (biliteracy), the evolution of translation pedagogy within communicative frameworks, and the role of digital scaffolding in reshaping the cognitive processes of writing and translating.

A. The Continua of Biliteracy: A Socio-Cognitive Foundation

Rather than viewing language learning as a linear accumulation of skills, these paradigms view it as a dynamic negotiation between technology affordances, situational circumstances, and learner agency. Central to this negotiation is the concept of biliteracy, which Hornberger defines as "any instances in which communication takes place in two or more languages in or around writing." [1]. This definition extends beyond mere linguistic proficiency, encompassing the complex interactions among individuals, digital environments, and educational programs.

Hornberger's Continua of Biliteracy [1] provides a multidimensional framework for understanding how learners navigate the intersection of their first language (L1) and target language (L2). This framework suggests that L1 literacy is strongly correlated with L2 development; specifically, drawing on L1 resources confers significant cognitive advantages [34]. Scholars posit that if the emergent L1 is suppressed rather than nurtured, learners risk losing L1 skills while simultaneously encountering greater difficulty acquiring L2 literacy [35]. Consequently, biliteracy is viewed as a unified linguistic repertoire where cognitive skills are transferred across languages to bolster academic performance.

B. The Reconceptualization of Translation in CLT

Historically, translation was marginalized within foreign language instruction, primarily due to the rise of direct methods that prioritized maximum L2 exposure and feared L1 interference. However, contemporary scholarship has debunked the notion that resorting to the L1 is inherently harmful [36]. Instead, empirical investigations reveal that translation is a natural, recursive heuristic in the L2 writing process. Rather than acting as a barrier, the L1 facilitates "positive transfer," particularly during the pre-formulation stages of writing, such as idea generation, organizational planning, and semantic elaboration [37][38].

In EFL contexts, translation serves a dual function. First, it serves as an epistemic tool, enabling students to articulate complex knowledge and beliefs even as their L2 vocabulary continues to develop. Second, it supports the transition from "writing to learn" to "learning to write." In vocational settings, where practical communication is paramount, translation allows students to bridge the gap between their technical knowledge (often conceptualized in the L1) and the linguistic requirements of the global workforce. This "translation turn" in CLT recognizes that bilingual learners naturally utilize their entire linguistic toolkit to achieve communicative competence.

C. Digital Scaffolding and the TAM

Recent pedagogical shifts in Technology-enhanced Language Learning emphasize a transition from product-oriented instruction to a process-oriented focus, facilitated by "multimodal scaffolding" [6]. Unlike traditional static aids, digital scaffolding provides real-time feedback that permits immediate cognitive adjustments during the recursive stages of drafting and revision. Research indicates that mobile learning platforms and flipped classroom models foster student autonomy and create "virtual communities" that sustain independent writing practices [12][7]. While the potential of digital tools is vast, their effectiveness is heavily mediated by the Technology Acceptance Model (TAM), in which "Perceived Usefulness" and "Perceived Ease of Use" serve as primary drivers of adoption [9]. However, a significant gap remains in understanding how this scaffolding functions in resource-constrained environments [5]. This gap directly informs RQ2, as the presence of "digital

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friction"—such as unstable connectivity or insufficient tool literacy—may negate the perceived benefits, thereby dampening student motivation.

Furthermore, the evolution of translation technology necessitates a shift from lexical substitution to cultural mediation. Kou [17] warns that without cultural-pragmatic competence, digital tools risk producing content that is "lexically correct but contextually void." Consequently, bilingual literacy must be viewed not as a technical skill, but as a critical evaluative [39]. The ethical and bilingual considerations raised by [21] suggest that, if students lack the training to evaluate audit tool output critically, their motivation may shift toward passive reliance rather than active literacy development. This study fills a critical void by documenting the tension between the technological ideal and the practical constraints faced by vocational students in developing this evaluative biliteracy.

III. Method

This study employed a mixed-method descriptive design to explore students' perceptions of technology-integrated learning media in developing bilingual literacy, particularly in English writing and translation. The research was conducted at SMKN 1 Jombang and involved four classes from grade XI: XI PH-1, XI PH-2, XI DKV-3, and XI DKV-4, with a total of approximately 120 participants purposively selected. Data were collected via an online questionnaire distributed via Google Forms, comprising both closed-ended Likert-scale items and open-ended questions. The instrument measured students' frequency of technology use, confidence, perceived usefulness, and personal reflections regarding their writing and translation experiences with digital tools.

Data collection took place from May to June 2025 during English lessons, following approval from teachers and school administrators. Participation was voluntary, with students' anonymity and confidentiality ensured. The data were analyzed using qualitative content analysis to identify thematic patterns, supported by simple descriptive statistics from closed-ended responses. To ensure research validity, techniques such as triangulation, peer discussion, and member checking were employed. This methodological framework enabled the researcher to develop a focused understanding of how vocational students engage with and respond to the integration of technology into bilingual literacy development.

IV. Results and Discussion

The following findings summarize students' responses to the questionnaire on the use of technology in English writing and translation tasks at SMKN 1 Jombang. The findings are presented to answer the research questions: (a) perceived effectiveness across stages, and (b) primary challenges and motivation.

A. Perceived Effectiveness across Stages

In this section, the data are presented to address the first research question derived from a predetermined aspect of effectiveness, using the TAM model. The quantitative data were categorized by technology type and frequency of use, perceived benefits, and effectiveness across different stages, and were supported by participants' excerpts as qualitative findings.

1) Types and Frequency of Technology Use

The data from Tables 1 and 2 reveal that technology plays a significant role in students' English learning experiences, particularly in writing and translation tasks. A substantial number of students (54.2%) reported frequently using tools such as Google Translate or Grammarly, indicating a strong preference for digital assistance with linguistic accuracy and translation. Other platforms, such as learning applications (20.8%) and YouTube or educational videos (15.0%), were also used, though to a lesser extent. Interestingly, only 10.0% used alternative tools, such as AI-based applications or online dictionaries. In terms of frequency, the majority of students used technology either several times a week (43.3%) or daily (33.3%), whereas a smaller group used these tools rarely (15.0%) or in unspecified patterns (8.4%). These figures underscore the central role of technology in supporting students' routine English language learning, particularly in enhancing writing performance and facilitating translation accuracy.

Table 1. Types of Technology Frequently Used by Students

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Technology Type	Number of Students	Percentage (%)
Google Translate or Grammarly	65	54.2%
Learning apps (Duolingo, Quillbot, LingQ)	25	20.8%
YouTube or online learning videos	18	15.0%
Others (e.g., AI tools, dictionaries)	12	10.0%

Table 2. Frequency of Technology Use in English Learning

Frequency	Number of Students	Percentage (%)
Every day	40	33.3%
Several times a week	52	43.3%
Rarely	18	15.0%
Others	10	8.4%

2) Perceived Benefits of Technology

The data presented in Tables 3 to 5 provide valuable insights into students' perceptions of the benefits of technology in improving English writing and translation skills. As shown in Table 3, a significant portion of students perceived technology as very useful (45.8%), while 37.5% regarded it as quite helpful in enhancing their writing abilities. This demonstrates a high level of appreciation for digital tools in facilitating the writing process.

Table 3. Students' Perceptions of Technology in Improving Writing Skills

Perception	Number of Students	Percentage (%)
Very useful	55	45.8%
Quite useful	45	37.5%
Not useful	10	8.4%
Others	10	8.3%

In terms of translation comprehension, Table 4 reveals that 40.0% of the students reported that technology helps them understand meaning more effectively, and 31.7% stated it assists in finding appropriate vocabulary. However, 18.3% acknowledged that technological tools can sometimes be confusing, suggesting that while these tools are generally beneficial, they may require careful guidance in their application.

Table 4. Technology's Impact on Translation Understanding

Impact	Number of Students	Percentage (%)
Helps understand meaning	48	40.0%
Helps find suitable words	38	31.7%
Sometimes causes confusion	22	18.3%
Others	12	10.0%

Table 5 further supports the perceived usefulness of technology, with 41.7% of students reporting significant improvement in their writing or translation performance, and 40.0% experiencing slight improvement. Only a small percentage of students reported no improvement. Overall, these findings reflect a generally favorable view of technology as a means to support and strengthen students' bilingual literacy, particularly in the domains of writing accuracy and translation comprehension.

Table 5. Improvement in Skills Through Technology

Improvement Level	Number of Students	Percentage (%)
Significantly improved	50	41.7%

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Improvement Level	Number of Students	Percentage (%)
Slight improvement	48	40.0%
No improvement	12	10.0%
Others	10	8.3%

3) Usefulness Across Writing and Translation Stages

The results from Tables 6 and 7 highlight the specific stages in the writing and translation processes where students find technology most beneficial. In the context of writing, the majority of students indicated that technology is invaluable during the editing and revising stages (35.0%), followed closely by the writing and organizing of ideas (33.3%), whereas a smaller proportion reported benefiting from technology during brainstorming and planning (23.3%). These findings suggest that students rely on digital tools not only to generate and structure their ideas but more prominently to refine their written work, indicating that technology serves as an essential aid in improving the accuracy and coherence of their writing. The following are sample excerpts of students' perceptions of the use of technology in the writing process.

> *"I usually draft my ideas in a mix of Indonesian and English. Grammarly helps me during the editing stage by catching grammar mistakes I missed. It is like having a digital tutor that makes my writing look professional."* (Participant B).

> *"When I am organizing my ideas, I use online dictionaries to make sure the flow of the sentences is correct. It helps me see how words fit together in a way that my textbook does not always explain."* (Participant C).

Table 6. Stages of Writing Where Technology Is Most Helpful

Writing Stage	Number of Students	Percentage (%)
Brainstorming & planning	28	23.3%
Writing & organizing ideas	40	33.3%
Editing & revising	42	35.0%
Others	10	8.4%

Similarly, in the domain of translation, students reported the most significant benefit in terms of understanding the meaning of source texts (38.3%), followed by assistance in finding accurate vocabulary (31.7%). Fewer students noted improvements in grammar and sentence structure (21.7%), indicating that while technology supports foundational aspects of translation, such as semantic comprehension and lexical selection, it is somewhat less relied upon for syntactic accuracy. These findings underline the instrumental role of technology in both conceptual and lexical stages of bilingual literacy tasks, reaffirming its value as a scaffold in learners' development of effective writing and translation strategies. The following are sample excerpts of students' perceptions of the use of technology when they made translations.

> "*Before translating a full paragraph, I put the difficult sentences into Google Translate just to understand the core meaning. Once I get the basic idea, I can rewrite it to sound more natural."* (Participant D).

> *"Vocabulary is my biggest struggle in vocational English. The apps help me find specific technical words that fit the context of my major. It saves so much time."* (Participant E)

Table 7. Aspects of Translation Most Benefited by Technology

Translation Aspect	Number of Students	Percentage (%)
Understanding meaning	46	38.3%
Finding accurate vocabulary	38	31.7%
Improving grammar & sentence structure	26	21.7%

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Translation Aspect	Number of Students	Percentage (%)
Others	10	8.3%

B. Motivation and Primary Challenges

This section addresses the second research question, examining the motivations and challenges faced by SMK students when using digital tools. The findings are presented in tables, and participants' quotations describing the perceived motivations and challenges.

As shown in Table 8, a majority of students (50.0%) reported feeling more motivated and confident when using technology for writing and translation tasks. In comparison, 30.0% expressed a neutral stance, and a smaller proportion (15.0%) reported feeling less motivated or more easily distracted.

Table 8. Motivation When Using Technology

Motivation Level	Number of Students	Percentage (%)
More motivated/confident	60	50.0%
Neutral	36	30.0%
Less motivated/distracted	18	15.0%
Others	6	5.0%

These quantitative findings are supported by the qualitative finding revealing that the use of technology can motivate students in learning English. The following are the students' excerpts expressing their motivation.

> "I feel much more confident when I have my phone or laptop because I know I will not make silly mistakes. It makes me want to write more complex sentences because the tool acts as a safety net." (Student G).

Despite these motivational benefits, Table 9 reveals persistent challenges, with students frequently encountering internet connectivity issues (33.3%), distractions from other applications (30.0%), and difficulty understanding how the tools function (23.3%). Some of the students also noted that the Internet connection was the biggest challenge when using the technology to help them with their English tasks. The following excerpts illustrate it.

> "The biggest problem is the school's internet. If I cannot connect, I get frustrated and lose interest in the assignment. It is hard to stay motivated when the technology we are supposed to use does not work consistently." (Student H).

> "Sometimes I get distracted by other notifications while using my phone for Duolingo or dictionaries. I know I should be studying, but the temptation to check social media is a real challenge." (Student I).

Table 9. Common Challenges in Using Technology

Challenges	Number of Students	Percentage (%)
Internet connection issues	40	33.3%
Difficulty understanding tools	28	23.3%
Distractions from other apps	36	30.0%
Others	16	13.4%

In response to these barriers, Table 10 shows that students desire more structured support in the classroom, particularly in the form of tutorials or training (41.7%), improved access to digital tools (33.3%), and increased teacher guidance (25.0%). Furthermore, they mentioned that they preferred the teacher's guidance even when they had instant feedback from the technology they used, as described in the following excerpts.

> "The tools are useful, but sometimes they provide confusing suggestions. I often feel like I am just guessing which correction to accept because I do not fully understand how the app works." (Participant J).

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"I do not want the technology to replace the teacher. I want the teacher to show me why the app made a certain mistake so I can actually improve." (Participant L).

Table 10. Preferred Support in Class

Support Type	Number of Students	Percentage (%)
Tutorials/training on tools	50	41.7%
Better access to apps/software	40	33.3%
More teacher guidance	30	25.0%
Others	0	0.0%

The data derived from Tables 8 to 10 emphasize students' motivation, challenges, and support needs in utilizing technology for English learning. As shown in Table 8, a majority of students (50.0%) reported feeling more motivated and confident when using technology for writing and translation tasks. In comparison, 30.0% expressed a neutral stance, and a smaller proportion (15.0%) felt less motivated or easily distracted. In response to these barriers, Table 10 shows that students desire more structured support in the classroom, particularly in the form of tutorials or training (41.7%), improved access to digital tools (33.3%), and increased teacher guidance (25.0%). These findings indicate that while students generally perceive technology as beneficial and engaging, they also require institutional and instructional support to overcome practical obstacles and fully integrate digital resources into their language learning practices.

The qualitative data obtained from the open-ended questionnaire reveal similar motivations. The following presents the students' motivation, challenges, and support in utilizing technology.

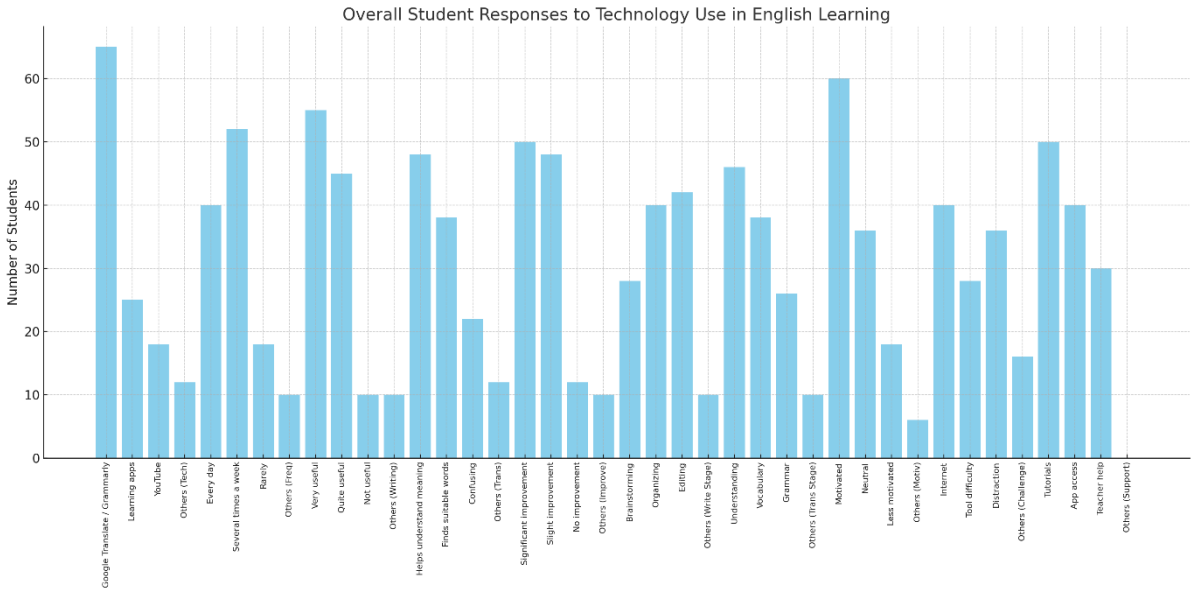

Figure 1. Student Responses to Technology Use in English Learning

Based on the bar chart titled *Overall Student Responses to Technology Use in English Learning*, it is evident that students demonstrate a high level of engagement with various forms of educational technology across multiple aspects of English writing and translation. The most widely used tool is Google Translate or Grammarly, with the highest number of users, reflecting students' reliance on language-support applications to improve accuracy and fluency. In terms of frequency, most students utilize technology several times a week, indicating its consistent integration into their learning routines. Students also perceive technology as very useful or quite useful, especially for improving translation understanding and vocabulary selection, though a small proportion finds it confusing. Moreover, the use of technology is reported to be most beneficial during the editing and

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revising stage of writing, as well as in understanding meaning during translation tasks. Motivation levels are notably high, with many students feeling more motivated and confident when using digital tools. Nevertheless, challenges such as internet connectivity issues, distractions, and difficulty using certain tools remain prevalent. Consequently, students express a clear preference for tutorials or training, better access to learning applications, and teacher guidance, underlining the importance of institutional support in maximizing the pedagogical value of technology-enhanced learning environments.

Discussion

This study examined how the integration of technology influences bilingual literacy, particularly in English writing and translation, among vocational high school students. Six primary aspects emerged from the findings: students' access to and preferences for digital tools; their frequency of technology use; perceived usefulness for enhancing writing and translation skills; the stages of language production at which technology is most helpful; students' motivation levels and challenges; and their expressed needs for instructional support. Each of these themes offers critical insight into how technology can be meaningfully leveraged in EFL (English as a Foreign Language) instruction.

First, regarding access and tool preferences, students predominantly used tools such as Google Translate and Grammarly, indicating a reliance on language-correction and translation platforms to facilitate both comprehension and production. These tools serve dual functions: they assist with grammatical accuracy and also support students in understanding and generating target-language content. This aligns with [17] and [18], which highlighted the growing value of machine translation in scaffolding learners' engagement with foreign texts. Moreover, the preference for familiar, user-friendly platforms suggests that the adoption of more complex applications may depend on adequate training and perceived utility.

In terms of frequency, the majority of students reported using technology several times per week, which demonstrates a habitual integration of digital tools into their learning routines. This echoes findings by [12], who reported that consistent digital engagement enhances learners' writing fluency and revision processes. Such frequent usage also underlines students' digital readiness, a critical factor in the success of technology-enhanced pedagogy in SMK settings.

With respect to perceived benefits, the findings revealed that students view technology as both valuable and motivating. Most participants felt that technology significantly improved their skills, particularly in vocabulary selection and meaning-making during translation. These results affirm the observations of Yang & Liu [9], who emphasized that machine translation tools contribute positively to vocabulary development and reading comprehension when strategically applied. However, a minority of students expressed confusion or perceived minimal benefit, indicating the need for scaffolding to bridge technological functionality with pedagogical purpose.

The analysis of stages in writing and translation showed that students found technology most helpful during editing and revising. This finding is consistent with research by Sumarsih et al. [14] and [15], who found that learners benefit from digital tools most significantly when engaged in higher-order thinking tasks such as revising for coherence and clarity. In translation, students valued tools that enhanced their understanding of meaning and the precision of vocabulary. However, fewer students reported improvements in grammar and sentence structure, suggesting a gap between the tool's capabilities and students' syntactic awareness. Instructional intervention is thus essential to optimize grammar acquisition in tandem with technological use.

Motivationally, most students reported greater confidence and engagement when learning with digital tools. This supports Chu [4] and Fernando & Aminatun [26], who argued that the interactive nature of technology fosters learner autonomy and intrinsic motivation. Nevertheless, challenges such as poor internet access, unfamiliarity with applications, and distractions from non-educational content posed substantial barriers. These issues are echoed in Adu & Amiruddin [3], who noted that technical limitations and lack of digital literacy can reduce the effectiveness of technology in classroom settings.

Finally, students' feedback on the support they need highlights the importance of comprehensive training, accessible digital infrastructure, and teacher facilitation. A significant proportion of learners requested tutorials and guidance, which aligns with Stevenson & Baker's [29]

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recommendation for structured, multimodal instruction to accompany digital media. In the absence of such support, learners may fail to harness the full educational potential of available tools.

In synthesizing these findings, it is evident that integrating writing and translation within a unified bilingual literacy framework is not only feasible but also pedagogically beneficial. Rather than treating these skills in isolation, this study supports Yu's [21] assertion that writing and translation are mutually reinforcing practices. By writing with the intention of being understood across linguistic boundaries, students improve clarity, precision, and cultural awareness—core competencies in both academic and vocational communication.

Moreover, the vocational context of SMK students makes the development of such bilingual literacy especially urgent. Unlike general education students, SMK learners are expected to apply English in specific occupational contexts. Whether in digital marketing, graphic design, or hospitality, the ability to write and translate effectively using digital tools positions them for a competitive advantage in the workforce. Thus, integrating interactive and practical technology use into their curriculum not only strengthens linguistic competence but also cultivates employability skills.

V. Conclusion

This study confirms the important role of technology-integrated learning media in developing bilingual literacy, particularly in English writing and translation among vocational high school students. The findings reveal that students frequently use tools such as Google Translate and Grammarly and find them especially helpful for editing, revising, and understanding vocabulary and meaning. Despite some challenges, such as internet issues and the need for better guidance, students generally perceive technology as motivating and beneficial. The integration of writing and translation supports both linguistic competence and career readiness. To maximize the benefits, schools should provide structured support, digital literacy training, and reliable infrastructure. A technology-driven approach, when implemented effectively, yields practical and promising outcomes for bilingual learning in vocational education.

The research contributes to the field of Technology-enhanced Language Learning by integrating the socio-cognitive and CLT frameworks as lenses for describing how technology was used in writing and translation. While traditional theories often treat writing and translation as isolated skills, this study provides a theoretical bridge showing how they function as a unified, iterative process in digital environments. By documenting the tension between perceived tool effectiveness and environmental constraints (like connectivity and tool literacy), the study adds a critical layer to Technology Acceptance Models (TAM), suggesting that there is a space between a student's ability to use a tool and their ability to evaluate its output critically.

For practitioners, this study suggests that curricula should include explicit training in evaluative biliteracy—teaching students not only to use tools such as Google Translate or Grammarly, but also to evaluate their outputs for vocational accuracy critically. Furthermore, for policy-makers and school administrators at the vocational level, the results underscore that bridging the digital divide (internet stability) is a prerequisite for fostering the workforce readiness and linguistic autonomy required in the modern global economy

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