

A DESCRIPTIVE STUDY ON THE INTEGRATION OF TECHNOLOGY AND CONTEXTUAL LEARNING IN SUPPORTING STUDENTS' WRITING SKILLS

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ABSTRACT

This study aimed to describe the integration of technology within the Contextual Teaching and Learning (CTL) approach in teaching descriptive writing and its contribution to students' writing skills at a senior high school in Sintang Regency, West Kalimantan. Despite the growing use of technology in EFL classrooms, limited studies have explored its integration within CTL-based writing instruction in Indonesian secondary schools. This study employed a qualitative descriptive design involving one English teacher and five eleventh-grade students selected through purposive sampling. Data were collected through classroom observation and document analysis and analyzed using thematic analysis. The findings revealed that technology was integrated via ChatGPT, Padlet, and Google Docs to support brainstorming, collaboration, drafting, revision, and feedback. The integration promoted CTL implementation and contributed to improvements in students' content, organization, grammar, vocabulary, and mechanics. The study concludes that purposeful technology integration within a CTL framework creates a more interactive and meaningful learning environment that supports students' writing development.

Keywords: *technology integration, CTL, writing skills*

A. Introduction

Among the four language skills, writing is often regarded as one of the most demanding competencies for EFL learners because it requires the integration of linguistic knowledge, critical thinking, and idea organization. It requires students to express ideas through coherent organization, appropriate language use, and critical thinking. However, many students still experience difficulties in generating ideas, organizing paragraphs, and applying grammar, vocabulary, and

mechanics effectively. Conventional writing instruction, which often emphasizes grammatical accuracy and final products, may reduce students' engagement and the contextual relevance of writing activities. Writing skill refers to the ability to communicate ideas accurately and coherently in written form, involving linguistic, cognitive, and social competencies (Kaufer & Ishizaki, 2025). It is commonly assessed through five components: content, organization, grammar,

vocabulary, and mechanics (Purnamasari et al., 2021). In this study, writing skill specifically refers to students' ability to produce descriptive texts in English.

The rapid expansion of digital technologies has transformed classroom practices and encouraged educators to incorporate technological resources into language instruction. Digital tools provide opportunities for authentic communication, collaboration, immediate feedback, and learner autonomy, which support students' language development and engagement (Warschauer, 2004; Shinta Sari et al., 2024). Previous studies have consistently demonstrated that technology integration positively influences students' writing performance. Huriati et al. (2024) reported that technology-enhanced learning environments increased students' engagement and facilitated language development through interactive and collaborative activities. Likewise, Rengur (2024) found that technology-supported learning strategies improved students' ability to organize ideas, enrich vocabulary, and produce more coherent written texts. The use of digital platforms also allows students

to participate in collaborative writing, receive timely feedback, and engage in continuous revision, all of which contribute to the development of effective writing skills. These findings suggest that technology can support not only the final writing product but also the writing process itself. Therefore, technology integration refers to the purposeful use of digital tools and AI-based applications to enhance learning outcomes while maintaining teacher guidance and students' critical thinking (Elstad, 2024).

Contextual Teaching and Learning (CTL) connects academic content with students' real-life experiences through constructivism, inquiry, collaboration, reflection, and authentic assessment (Johnson, 2002). Through social interaction and collaboration, students actively construct knowledge, consistent with Vygotsky's (1978) social constructivist perspective. Previous studies indicate that CTL enhances students' motivation and writing ability by encouraging them to develop ideas grounded in meaningful contexts (Sari et al., 2024; Syafira & Afrita, 2022).

The integration of technology within CTL emphasizes the alignment

of digital tools with pedagogical principles rather than using technology as an isolated instructional tool. Existing studies have largely focused either on technology-assisted language learning or on the implementation of CTL as an independent instructional approach. Research examining how both elements operate together in EFL writing classrooms remains limited, particularly in the context of secondary education in West Kalimantan. This perspective aligns with the TPACK framework, which highlights the importance of integrating technology, pedagogy, and content knowledge to support meaningful learning (Koehler & Mishra, 2009).

This study makes a novel contribution by examining the pedagogical integration of digital technology within the Contextual Teaching and Learning (CTL) framework for EFL writing instruction, using a qualitative descriptive approach. Unlike prior studies that tend to investigate technology or contextual learning separately and emphasize experimental outcomes, this research provides an in-depth exploration of instructional processes in a real classroom context.

Conducted in a senior high school in West Kalimantan, an underrepresented region in EFL research, this study contributes contextualized empirical evidence on how technology-enhanced contextual learning supports students' writing development.

Despite the increasing use of digital technology in classrooms, it is often applied only at a surface level without meaningful integration with pedagogical approaches such as Contextual Teaching and Learning (CTL). However, preliminary observations at one of the public senior high schools in Sintang Regency reveal a different phenomenon. Based on preliminary observations, the use of digital devices during classroom instruction remains limited in several public senior high schools in Sintang Regency. However, the school selected for this study permits the use of technology to support learning activities, making it a relevant setting for investigating technology-integrated contextual learning. The English teacher connects writing activities with students' real-life contexts, such as describing familiar environments and daily experiences. Digital tools such

as Padlet are used to facilitate idea sharing and collaborative discussions, while Google Docs supports drafting, revising, and real-time feedback. In addition, ChatGPT is utilized to assist students in developing ideas, enriching vocabulary, and reviewing sentence structures. These practices make writing activities more interactive and meaningful, encouraging active student engagement. Therefore, this study aims to investigate how technology integration within the CTL approach is implemented in writing instruction and how it contributes to improving students' writing skills.

This study is guided by two research questions: how is technology integrated into contextual learning in teaching writing at one of the public senior high schools in Sintang Regency, and how does the integration of technology and contextual learning support students' writing skills? In line with these research questions, the objectives of this study are to describe the implementation of technology and Contextual Teaching and Learning (CTL) in writing instruction and to explain how the integration of

technology and contextual learning supports students' writing skills.

This study contributes to the understanding of technology-integrated CTL in EFL writing instruction. The findings provide practical insights for teachers in designing contextual, collaborative, and technology-supported writing activities that enhance students' engagement and writing development.

B. Methodology

1. Research Design

A descriptive qualitative approach was selected because the study sought to portray classroom practices and participants' experiences related to technology-supported contextual writing instruction. According to Sandelowski (2000), qualitative descriptive research aims to describe phenomena as they naturally occur without extensive theoretical interpretation. Therefore, this design was considered appropriate for examining classroom practices and technology-supported writing instruction.

The research is conducted at one of the public senior high schools in Sintang Regency, West Kalimantan, Indonesia. The participants consisted

of one English teacher and five eleventh-grade (Grade XI) students who participated in the writing instruction process. They are selected through purposive sampling due to their direct involvement in the implementation of technology-integrated CTL (Creswell, 2016). The five students were selected because they actively participated in all stages of technology-integrated writing activities and represented different levels of writing achievement. Their involvement provided diverse perspectives regarding the implementation of technology-supported contextual learning in writing instruction.

2. Techniques of Data Collection

Data are collected through classroom observation and document analysis. Observation was conducted to identify the use of digital tools, online platforms, and AI-based applications, as well as the implementation of Contextual Teaching and Learning (CTL) principles, including constructivism, inquiry, collaboration, reflection, and authentic assessment in writing instruction. Document analysis involved lesson plans, digital learning materials, and students' descriptive

writing products to support and triangulate the findings. Students' writing products were examined using an analytical writing rubric to identify patterns in writing quality across aspects such as content, organization, grammar, vocabulary, and mechanics, as proposed by (Stevens, 2013).

The primary research instrument was an observation checklist developed from the constructs of technology integration, CTL components, and writing-skill indicators in EFL instruction. The checklist focused on three aspects: (1) the use of digital tools in the writing process, including collaboration and feedback; (2) the implementation of CTL principles; and (3) students' writing performance indicators. These indicators were adapted from Huriati et al. (2024) for technology integration, Syafira and Afrita (2022) for Contextual Teaching and Learning (CTL) components, and Stevens and Levi (2013) for writing assessment indicators.

Table 1. Observation Checklist
Indicators

Aspect	Indicators
Technology Integration	Use of ChatGPT, Padlet, and Google Docs during writing activities

CTL	Constructivism, Inquiry,
Components	Learning Community, Reflection, Authentic Assessment
Writing Skills	Content, Organization, Grammar, Vocabulary, Mechanics

Classroom observation and document analysis are used to address the first research question regarding how technology is integrated within CTL, while students' writing products and observational data are used to answer the second research question concerning how the integration supports students' writing skills.

3. Technique of Data Analysis

The data are analyzed using thematic analysis, a qualitative method aimed at identifying, analyzing, and reporting patterns or themes emerging from the data. This method was selected for its flexibility and suitability for descriptive qualitative research focused on participants' lived experiences. According to Braun & Clarke, (2006) Thematic analysis involves six stages:



The analytical rigor of the study is further strengthened by following the systematic procedures outlined by (Kiger & Varpio, 2020). To ensure trustworthiness, source and method triangulation are applied throughout the research process.

4. Trustworthiness

To ensure the data's trustworthiness, the researcher applied triangulation techniques during data collection and analysis (Lincoln, 1985). Source triangulation is used by collecting data from different participants, including the English teacher and the eleventh-grade students. In addition, method triangulation is used by employing multiple data collection techniques, such as classroom observation and document analysis. These strategies are implemented to obtain comprehensive data and to enhance the credibility of the research findings. In addition, member checking was

conducted by discussing the observation results with the English teacher to confirm the accuracy of the interpretations. This procedure helped ensure that the findings accurately reflected the classroom practices observed during the study.

C. FINDINGS AND DISCUSSION

This section presents the findings obtained from classroom observations and document analysis concerning the integration of technology within the Contextual Teaching and Learning (CTL) approach in writing instruction and how such integration supports students' writing skills. The data were analyzed using thematic analysis following Braun and Clarke's (2006) framework. To enhance credibility, source and method triangulation were conducted by comparing findings derived from classroom observations and document analysis.

The analysis generated three interconnected themes: (1) Technology Integration in CTL-Based Writing Instruction, (2) Contextual and Collaborative Learning Environment, and (3) Technology-Supported Writing Skill Development. These themes collectively address the two research

questions regarding the implementation of technology-integrated CTL and its contribution to students' writing development.

These themes were closely interconnected. The first theme focused on how digital tools such as ChatGPT, Padlet, and Google Docs were integrated into CTL-based writing instruction. The second theme described how the integration of these technologies facilitated a contextual and collaborative learning environment through inquiry, interaction, reflection, and learning community activities. The third theme highlighted the contribution of technology-supported contextual learning to students' writing development, particularly in terms of content, organization, grammar, vocabulary, and mechanics. Together, these themes illustrate the relationship between technology integration, CTL implementation, and students' writing skill development.

1. Technology Integration in CTL-Based Writing Instruction

Classroom observations indicated that digital tools were embedded throughout different stages of the writing process rather than being used as supplementary

resources. The teacher used ChatGPT for brainstorming activities, Padlet for collaborative discussion, and Google Docs for drafting, revising, and providing feedback. The integration of technology supported the implementation of CTL principles, particularly constructivism, inquiry, collaboration, reflection, and authentic assessment. Document analysis of the lesson plan revealed that digital technology was systematically integrated into each stage of the writing process. The lesson plan included brainstorming activities using ChatGPT, collaborative discussion through Padlet, and drafting and revision activities through Google Docs. In addition, the learning objectives emphasized students' ability to develop descriptive texts based on their own experiences and familiar environments, reflecting the principles of Contextual Teaching and Learning (CTL). During the brainstorming session, students used ChatGPT to generate ideas related to descriptive text topics. Observation Note 1: Students actively discussed ideas on Padlet and provided peer feedback before drafting their descriptive texts. Observation Note 2: Students revised their writing in

Google Docs based on teacher comments and peer suggestions, demonstrating reflection and continuous improvement throughout the writing process. After generating ideas, students posted their responses on Padlet and exchanged comments with their classmates. The drafting and revision process was conducted through Google Docs, where students received feedback from both the teacher and peers. These activities encouraged active participation and facilitated collaboration throughout the writing process.

Table 2. Evidence of CTL Components in Writing Instruction

CTL Component	Evidence	Technology Used
Constructivism	Students generated ideas based on personal experiences and familiar environments	ChatGPT
Inquiry	Students explored descriptive text topics using ChatGPT	ChatGPT
Learning Community	Students exchanged feedback and	Padlet

	ideas through Padlet discussions	
Reflection	Students revised drafts based on teacher and peer feedback in Google Docs	Google Docs
Authentic Assessment	Students' descriptive texts were assessed through drafting and revision processes	Google Docs

The findings indicate that technology was integrated systematically throughout the writing process rather than being used as an additional instructional tool. ChatGPT supported brainstorming and inquiry activities, Padlet facilitated collaborative discussion, and Google Docs enabled drafting, revision, and feedback. These technologies aligned with key CTL principles, including constructivism, inquiry, learning community, reflection, and authentic assessment. This finding supports the TPACK framework proposed by Koehler and Mishra (2009), which emphasizes the meaningful alignment of technology, pedagogy, and content

knowledge. The result is also consistent with Huriati et al. (2024), who found that technology-enhanced learning environments promote active participation and language development. In this study, technology became pedagogically meaningful because it was embedded within contextual learning activities that actively engaged students throughout the writing process.

This finding is consistent with Heinonen et al. (2020), who emphasize that technology-supported collaborative writing promotes active participation and meaningful engagement throughout the writing process.

2. Contextual and Collaborative Learning Environment

Observation data demonstrated that CTL-oriented activities encouraged students to engage in shared learning experiences and connect writing tasks with situations familiar to their daily lives. Students discussed ideas, explored information, and connected writing topics with their real-life experiences. Collaborative activities through Padlet and group discussion encouraged students to participate

more actively during writing instruction.

The findings suggest that the integration of technology strengthened the implementation of Contextual Teaching and Learning (CTL) by creating a contextual and collaborative learning environment. Through Padlet discussions and group interaction, students actively exchanged ideas, negotiated meaning, explored information, and connected writing topics with their own experiences before composing their texts. These activities enabled students to construct knowledge collectively rather than relying solely on teacher explanations.

This finding supports Johnson's (2002) CTL framework, which emphasizes meaningful learning through authentic contexts, inquiry, collaboration, and reflection. The use of familiar topics and real-life experiences allowed students to relate classroom activities to their everyday lives, making the learning process more meaningful. Furthermore, the collaborative activities observed during the lesson reflect Vygotsky's (1978) social constructivist theory, which highlights the importance of social interaction in knowledge

construction and cognitive development. Through discussion and peer interaction, students were able to clarify ideas, exchange perspectives, and develop a deeper understanding of writing topics.

The findings are also consistent with Syafira and Afnita (2022), who reported that contextual learning enhances students' engagement and writing performance by making learning activities more relevant to students' daily experiences. In the present study, technology strengthened CTL implementation by providing digital spaces that facilitated interaction, collaboration, and active participation throughout the writing process.

The finding also aligns with Su and Zou (2020), who argue that technology-enhanced collaborative learning facilitates interaction, knowledge construction, and active learner participation in language learning environments.

3. Technology-Supported Writing Skill Development

The findings demonstrated that technology supported students' writing development across content, organization, grammar, vocabulary, and mechanics. Students generated

clearer ideas, organized paragraphs more systematically, and improved grammatical accuracy after using digital tools.

Analysis of students' writing products showed improvements across several aspects of writing, including content development, organization, grammar, vocabulary, and mechanics. Students revised their texts based on feedback received through Google Docs and teacher guidance. The revisions demonstrated that technology-assisted learning helped students identify and correct language errors while improving the overall quality of their writing.

The findings further revealed how each technology contributed to students' writing development. ChatGPT supported students in generating ideas and expanding descriptive vocabulary during the pre-writing stage, resulting in richer content. Padlet facilitated peer discussion and idea sharing, helping students organize their ideas into more coherent paragraphs. Meanwhile, Google Docs enabled students to revise their drafts based on teacher and peer feedback, leading to improvements in grammar, vocabulary, and mechanics. These

findings indicate that the integration of technology supported students throughout the entire writing process, from planning to revision, and contributed to the quality of their descriptive texts.

Table 3. Evidence of Students' Writing Improvement Through Revision Activities

Student	Before Revision	After Revision
S1	1. "This place is famous as one of the tourist attractions in Sintang."	1. "This place is famous as a tourist attraction in Sintang."
S2	2. "Therefore, the Waterfront has become my most favorite place to visit."	2. "Therefore, the Waterfront has become my favorite place to visit."
S3	1. "She has a medium height and a slim body."	1. "She has a medium height and a slim body."
S4	2. "Her skin is yellowish fair and looks very smooth."	2. "Her skin is yellowish-fair and looks very smooth."
S5	"The staff are friendly and helpful to customers."	"The staff is friendly and helpful to customers."

The revisions indicate improvements in grammatical accuracy, lexical choice, article usage, adjective formation, and subject-verb agreement. These changes

demonstrate that technology-assisted feedback and teacher guidance helped students identify language errors and refine the quality of their descriptive texts.

The findings indicate that technology-assisted feedback contributed to students' writing development across content, organization, grammar, vocabulary, and mechanics. Digital tools supported students throughout the writing process, while teacher guidance remained important in helping students evaluate and refine their work. These findings support Warschauer's perspective that technology enhances communication, collaboration, and learner autonomy in language learning.

Table 4. Technology Support for Students' Writing Skills

Writing Aspect	Evidence from Students' Writing
Content	Students added more detailed descriptions after brainstorming activities using ChatGPT.
Organization	Ideas were arranged more logically following peer discussion and revision.
Grammar	"most favorite" was revised to "favorite"; article and subject-verb

agreement errors were corrected.

Vocabulary Students used more precise descriptive words such as "yellowish-fair" and "tourist attraction".

Mechanics Punctuation and spelling errors were reduced after revision through Google Docs feedback.

The findings demonstrate that technology-supported writing instruction contributed to students' development across content, organization, grammar, vocabulary, and mechanics. Through brainstorming activities, students were able to generate and expand ideas more effectively. Collaborative discussion encouraged the organization of ideas into coherent paragraphs, while digital feedback facilitated the revision of grammatical, lexical, and mechanical errors. The evidence from students' writing products indicates that revisions resulted in clearer expression, improved grammatical accuracy, and more appropriate vocabulary use.

These findings support Warschauer's view that technology enhances communication, collaboration, and learner autonomy in language learning. They are also

consistent with previous studies indicating that technology can improve writing performance when integrated purposefully into instructional practices. However, the findings reveal that teacher guidance remained essential throughout the writing process. Although ChatGPT assisted students in generating ideas and exploring language use, several students still required support in evaluating the accuracy and appropriateness of AI-generated suggestions. Therefore, technology functioned as a pedagogical support tool rather than a replacement for the teacher's role. The effectiveness of technology integration depended on how digital tools were aligned with contextual learning activities that promoted inquiry, collaboration, reflection, and active student participation. The finding is further supported by Escalante et al. (2023), who found that AI-generated feedback can assist students in improving writing quality through revision and language refinement.

D. Conclusion

The study demonstrates that combining digital tools with contextual learning strategies can enrich

classroom writing practices by promoting interaction, collaboration, and continuous revision. The use of ChatGPT, Padlet, and Google Docs facilitated brainstorming, collaboration, drafting, revision, and feedback activities while supporting key CTL principles. The integration contributed to improvements in students' content, organization, grammar, vocabulary, and mechanics, indicating that technology can support writing development when meaningfully embedded within contextual learning activities.

These findings highlight the potential of technology-integrated CTL to create a more meaningful, interactive, and collaborative learning environment in EFL writing classrooms. Therefore, teachers are encouraged to integrate digital tools purposefully to support students' engagement and writing development while maintaining appropriate pedagogical guidance throughout the learning process.

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