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VIPCALL: A design-based method of visual grammar symbols for improving EFL Students' fiction writing

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Abstract

*This mixed-methods DBR study designed and assessed VIPCALL, a web-based multimodal program, which embedded visual grammar symbols into fiction writing instruction for EFL learners. The sample included 50 university students at an intermediate proficiency level who were involved in a 16-week intervention involving needs analysis, symbol development, classroom implementation, and iterative refinement. Quantitative tools included validated grammar pre- and post-tests (Cronbach's $\alpha = 0.86$) and writing rubrics; qualitative data included classroom video logs, peer debriefings, and student reflections. Change in grammar and writing results were measured with paired-samples *t*-tests and normalized gain, $N\text{-Gain} = 0.71$; thematic analysis was applied to qualitative data. The findings described here include statistically significant improvements in grammar recognition, writing accuracy, and narrative coherence-mean pre being 119.63 and mean post being 158.93-and self-reported decreases in anxiety, plus heightened engagement and confidence while writing creatively. The study illustrates the effectiveness of visual-symbol scaffolding within a collaborative digital environment as a means to harmonize grammatical accuracy with creative expression and presents practical guidelines on how to integrate symbol-based tools into the pedagogy of EFL writing.*

Keywords: *creativity; VIPCAL; visual symbols; writing instruction*

INTRODUCTION

In an age where creative thinking and digital literacy continue to rise, the ability to create coherent and engaging fiction in English has become increasingly valuable not only within the context of academic work but also beyond in wider international communication. Yet, despite this growing demand, many EFL learners still find it difficult to bridge the grammatical-correctness gap to creative expression. One common challenge is how to balance grammatically correct linguistic structures, such as tense, word order, and cohesive narrative texture, against imaginative storytelling (de Schryver, 2023; Kumar & Benyo, 2021). Due to this problem, unsequenced events, abrupt transitions, and incoherent text structures often characterize student writing, especially among those who are left unequipped to contextualize grammar into meaningful communicative tasks (Shadieff & Feng, 2024).

Traditional grammar instructions are conducted in decontextualized formats, focusing on the mere memorization of rules that seldom translates into better creative writing performance. Current educational trends are toward active, student-centred, and multimodal learning. There is, therefore, an urgent need for pedagogical models that balance linguistic precision with creativity. Approaches combining narration, visual thinking, and learner autonomy have proved to enhance engagement and deepen language mastery; such models remain largely underdeveloped in the area of fiction writing.

In order to fill this gap, the current study presents VIPCALL (Visual Symbol, Picture and picture, Collaborative Assisted Language Learning), a web-based multimodal program that aims at incorporating visual grammar symbols into the instruction of fiction writing. Combining visual symbols, instructional videos, collaborative quizzes, computer-mediated storytelling activities, and student-produced songs, VIPCALL provides an active, multimodal environment that supports creative written production.

The VIPCALL framework, based on the principles of multimodal learning, grounded in cognitive load theory, uses visual and audio channels to maximize engagement by reducing cognitive barriers and enhancing retention. This is considering Mayer's views (2024) and Lathwesen & Belova (2021). The constructivist design further fosters socially mediated learning congruent with the key competencies of the 21st century. It has three main aims:

- (1) to construct visual grammar symbols representing core grammatical features such as tense, conjunctions, and adverbs;
- (2) to assess how these symbols combined with activities such as videos, group quizzes, and music-based activities affect grammatical accuracy and creative writing in students; and
- (3) To assess how the VIPCALL platform contributes to improvement in narrative coherence and an overall increase in writing performance.

This study bridges the long-standing separation between linguistic accuracy and creativity by integrating visual literacy with grammar instruction. Its contribution is threefold: theoretically to multimodal pedagogy, methodologically to the field of design-based research, and pedagogically to innovative grammar instruction. The present study ultimately positions VIPCALL as a model to reconceptualize grammar as a resource for imagination and confident language use rather than an abstract set of rules.

Review of Literature

Theoretical support for the present study can be found in research related to grammar acquisition, multimodal learning, and computer-assisted creative writing. Traditional grammar teaching, according to Shen & Chong (2023), usually cannot engage learners effectively since the very nature of such teaching—just memorizing the rules out of context—is too non-authentic. Such findings have provoked shifts toward communicative, contextual, and interactive methods, where grammar is considered not a mechanical system but as a means of expression.

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Recent research evidences the advantages of visual aids and multimodal input in language learning. The cognitive theory of multimedia learning (Chen et al., 2024) maintains that a dual visual-auditory mode reduces the level of cognitive load and improves comprehension. Multimodal methods are also believed to fit different learning styles and promote long-lasting retention, especially for material that is more complex, like grammar (Gkintoni et al., 2025). These findings hint those grammatical notions can become more intuitive and straightforward when presented with symbology and pictorials.

Paralleling these developments in linguistic theory, advances in educational technology have increased opportunities for learning grammar through interactive quizzes, immediate feedback, and learner-controlled learning environments. (Nguyen, 2022) found that visual-based electronic media significantly enhance grammatical fluency and accuracy in L2 writing, especially when students create their own multimodal texts. Despite these advances, technological tools often isolate grammar instruction from creative writing, with the result of limited transfer from rule mastery to meaningful writing.

Research into creative writing supports this challenge. (Chatterjee & Halder, 2022) noted how learners often fail to use grammatical knowledge when writing a story, while (Roth, 2021) documented that even advanced students tend to sacrifice the flow of a narrative when they focus too much on syntactic correctness. These findings support calls for integrated instructional designs that can enable learners to apply grammar more naturally in creative contexts.

Although abler pieces of research have cropped up through digital storytelling by Fang et al. (2023) and the use of visual supports by Thorne & Hellermann (2022), most fail to integrate all into a single model that would train grammar control and narrative simultaneously. Most of the current platforms encapsulate grammar practices and creative activities in separate chunks. This evidences the gap within the literature: a learner-centred, visually scaffolded narrative-driven digital intervention smoothly integrating grammar learning with creative writing does not exist.

The present study addresses this gap by providing VIPCALL, a constructivist multimodal model that embeds grammar instruction within imaginative, visually mediated, and collaboratively constructed writing activities. By merging various strands of research, namely visual grammar, multimodal learning, creative writing pedagogy, and technology-supported instruction, VIPCALL presents an empirically tested innovation with great potential to be adopted for use in EFL classrooms around the world.

METHOD***Research Design***

This study employed a design-based research methodology. Unlike other, more traditional methods of research and development, design-based research is iterative, collaborative, and responsive to context. DBR enables the joint development of instructional technologies and theory in close collaboration with authentic learning environments (McKenney, 2018). It was adopted for this

study because it can handle classroom complexity and allows for instructional designs to be refined iteratively over several cycles of reflection, testing, and refinement. This implies that, within the framework of this research design, various experts and practitioners collaborated in the design, implementation, and revision of the VIPCALL model to make sure it remained theoretically sound but also addressed real classroom needs.

This research followed four interconnected phases in the DBR process. Firstly, it conducted a problem and needs analysis through lecturer interviews, classroom observations, and analysis of student writing samples. From this stage, the researchers identified some recurring difficulties in fiction writing, such as inconsistency in the use of tenses, word order problems, conjunctive use, and metaphorical expression (Mair & Leech, 2020). Secondly, informed by the findings from stage one, it designed visual grammar symbols and supporting media like digital quizzes, storytelling exercises, and student songs based on multimodal learning theory and visual grammar pedagogy (Hardison & Pennington, 2021) and integrated them into the VIPCALL platform. Thirdly, the model was trialed and iteratively refined across several cycles in the classrooms. During each cycle, it gathered data from pre- and post-tests, student artifacts, classroom video recordings, and structured observation logs (Ansyari et al., 2022). Lastly, a refinement and evaluation phase was done in which the quantitative and qualitative data were triangulated to examine the impact of VIPCALL on grammatical accuracy and creative writing performance. The peer debriefing and student reflection informed further adjustments of the instructional design (Badea & Popescu, 2022).

Respondents

The respondents in the present study were 50 English Education students from one university in West Java, Indonesia. They had been selected through a purposive sampling technique, with two criteria: first, they had intermediate proficiency in English; second, they were taking academic writing courses during the time of this study. Such a learning context would provide an appropriate environment to test the symbol-based grammar support within fiction writing instruction. Prior to data collection, institution permission and ethical clearance were obtained, and all participants were fully informed about the purpose and procedures of the research.

Instruments

In order to ensure strong triangulation, the research also combined quantitative and qualitative instruments. The grammar pre- and post-tests explored students' knowledge and usage of certain grammar features before and after exposure to VIPCALL. The tests were developed and checked by experts, piloted with a similar group of students, and revealed good reliability (Cronbach's alpha = 0.86) (ÇOBANOĞULLARI & Özbek, 2025). Writing rubrics for students' fiction writing considered the textual elements of narrative coherence, grammatical accuracy, creativity, and fluency. An observation checklist was used to record learners' behavior and linguistic responses in class; among other things, the level of their engagement with the visual symbols and with collaborative tasks. Besides this, classroom video recordings created in-depth records of the immediate interaction with the platform and between peers as it occurred, so

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the recordings provided detailed evidence of how VIPCALL worked in practice. Lastly, peer debriefing transcripts and students' reflections provided thick qualitative data about learners' experiences, emotional involvement, and perceived usefulness of the model (Stone, 2020).

Procedures

The intervention took 16 weeks and was divided into four major procedural stages. During Week 1, a needs analysis was conducted through observations and interviews to map the students' major grammatical challenges in fiction writing. Weeks 2–5 were the design and development stage, when the visual grammar symbols and the related learning activities were produced, reviewed by experts, revised, and then embedded in the VIPCALL platform. Implementation and iterative testing occurred during Weeks 6–13, when VIPCALL was used in the regular class sessions, and each cycle was followed by reflection meetings, feedback by students and lecturers, and small revisions to content sequencing, instructions, or interface features. Weeks 14–16 were assigned for evaluation and revision, when the data from tests, observations, videos, and reflections were compiled to estimate the effectiveness of the VIPCALL and to formulate the final version of this model. During all these stages, close collaboration was maintained between the research team and classroom lecturers and student participants, according to the emphasis given by DBR to practitioner participation.

Data Analysis

Quantitative and qualitative data analysis approaches were used in this research. In the quantitative strand, students' pre- and post-test scores were analysed using descriptive statistics and paired-sample t-tests to examine the degree of improvement in grammar skills. These analyses thus provided evidence of changes in accuracy and overall performance associated with the use of VIPCALL. Under the qualitative strand, transcripts of peer debriefing, classroom observations, and student reflections were subjected to thematic coding. An inductive-deductive coding process was applied by first using categories such as symbol recognition, writing fluency, and engagement, which were later refined as new patterns emerged from the data (Bahari & Gholami, 2023). Finally, triangulation was conducted by comparing findings across instruments and data sources. This process enhanced the credibility of the interpretations and allowed a more comprehensive understanding of how visual symbols and the VIPCALL platform influenced learners' grammar and creative writing development.

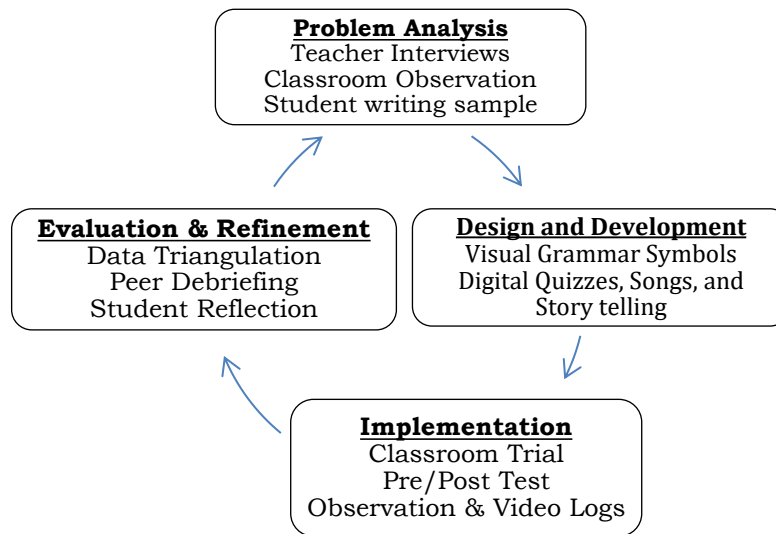


Figure 1. Repeated Cycle of Study in Design Based Research (DBR).

Table 1. Instruments Used in the Study

Instrument	Purpose	Type	Validation
Grammar Pre- and Post-Tests	Measure grammatical accuracy before and after VPCALL usage	Quantitative	Piloted with experts; Cronbach's $\alpha = 0.86$
Writing Rubric	Evaluate students' fiction writing (grammar, creativity, flow)	Quantitative	Based on validated genre-specific scoring guidelines
Observation Checklist	Monitor engagement, symbol usage, peer collaboration	Qualitative	Adapted from previous classroom research instruments
Classroom Video Recordings	Capture real-time learning behavior and tool interaction	Qualitative	Triangulated with observation and student feedback
Peer Debriefing Transcripts	Gain lecturer feedback on implementation effectiveness	Qualitative	Thematically coded
Student Reflections	Explore learner perspectives and emotional engagement	Qualitative	Open-ended prompts analyzed through coding cycles

RESULTS

The first stage of the DBR cycle was about finding out students' grammatical problems in fiction writing. Needs analysis data from pre-tests, interviews, and classroom observations confirmed recurring difficulties in tense consistency, adverb placement, clause linking, and metaphorical expression. These also resonated with earlier reports that abstract grammar rules are quite hard for learners to internalize without contextualization. Such findings came from Hlavatsch & Mizaikoff (2022) and Ahmad et al. (2025). This informed the development of a visual grammar symbol system that intended to convert complex grammatical rules into concrete and easily recognisable forms.

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Based on this needs analysis, a series of tenses, adverbs, epithets, auxiliary verbs, pronouns, conjunctions, verbs, and nouns were visually represented as grammar symbols developed by the research team. Initially, analogue formats of these-such as flashcards and matching games-were introduced to students before being taken up fully into the digital VIPCALL platform. Expert validation confirmed that these symbols were cognitively clear and appropriate for different cultures, in addition to confirming their appropriateness against standards from the ELT (Smith, 2022; Hamam, 2021). Wherever expert feedback occurred, especially with regard to simplifying images and reducing cultural bias, consideration was given to incorporating minor adjustments (Roth, 2021).

Classroom implementation was done in several iterative cycles whereby students were engaged in seven themed lessons combining direct instruction, symbol-based activities, and collaborative storytelling (Asrifan et al., 2025; Ali et al., 2022). Throughout these cycles, symbol presentation and sequencing were refined for clarification. For instance, the tense visuals were reshuffled in Session 4 due to confusion, while group brainstorming in Session 6 was added to give more significant meaning to adjective order for the students. Reflection sessions, lecturer debriefings, and formative feedback informed continuous refinements.

Quantitative results identified significant improvement in grammar mastery and writing performance. According to Table 2, the percentage of students with “excellent” performance increased from 0% on the pre-test to 90% on the post-test, with mean scores increasing significantly from 119.63 to 158.93. Statistical tests for Shapiro–Wilk confirmed normality ($p > 0.05$), and the normalized gain (N-Gain = 0.71) demonstrated a very high increase. Further analysis from Table 3, however, has revealed orderly increases in all targeted language features of sentence coherence, engagement, retention, and mastery of dynamic verbs with the biggest increases of +40%. Findings support earlier claims that visual scaffolding enhances grammar recognition and writing accuracy by reducing cognitive load (Garrido-Ardila et al., 2022).

Table 2. Student Performance Pre- and Post-Intervention

Performance Level	Pre-Test (%)	Post-Test (%)
Excellent	0	90
Good	40	10
Sufficient	46	0
Perfect	7	0

Table 3. Improvement by Language Features

Feature	Pre (%)	Post (%)	Gain (%)
Grammar Recognition	50	85	+35
Writing Accuracy	40	75	+35
Sentence Coherence	30	70	+40
Engagement	40	80	+40
Retention	45	85	+40
Tenses	40	75	+35
Auxiliary Verbs	45	80	+35
Epithets	30	60	+30
Adverbs	50	85	+35

Verbs (Dynamic)	40	80	+40
Nouns	45	80	+35
Conjunctions	35	70	+35

Qualitative evidence from student reflections, debriefing sessions, and writing samples supplemented the quantitative gains. Students indicated that visual symbols helped them "think in English," reduced reliance on translation, and increased confidence in experimenting with narrative structures (Shan, 2025). Improvements in narrative coherence were also evident in writing samples; for example, post-intervention texts demonstrated more accurate use of tense and descriptive detail, as shown in the reworked Snow-White narrative ("She had already eaten the poisoned apple when the prince arrived"). This contrasts with the fragmented and simplified structures characteristic of pre-test samples. Students also mentioned that symbol-based planning assisted them in their sense of audience, flow, and plot development (Zulfiqar et al., 2023).

This digital integration of the visual grammar symbols in VIPCALL furthered learning. The game-based components in the platform involve symbol-matching tasks, sentence-building games, and grammar-through-song activities, which offer immediate feedback and self-correction opportunities (Bruno et al., 2023; Ferreira & Qiu, 2021). Indeed, these interactive features have helped bridge the gap between rule-focused grammar learning and its communicative application. Collaboration modules allowed for peer discussion and editing, which facilitated a social learning environment with increased student agency and sustained engagement (Mohebbi, 2025; Aljohani, 2022). The 40% rise in engagement and retention reflects the motivational benefits indeed created by the combination of multimodal elements with collaborative digital practice (Babineau et al., 2024).

Peer debriefings and focus group discussions brought out both advantages and areas for improvement. The students liked the clarity that came from the visual cues and asked for more narrative samples to model the use of symbols in valid writing. Challenges noted included occasional confusion when tasks required collaboration and a need for clearer onboarding. According to this feedback, the platform's "symbol dictionary" was added to enable independent reference and decrease the cognitive overload when writing (van der Linden et al., 2022; Yan et al., 2024). Students frequently commented on their reduced anxiety toward grammar, saying this was due to the playful, low-stakes nature of the symbol-based activities (AlTwijri & Alghizzi, 2024).

Overall, these findings indicate that visual icons in a digital multimodal context can make the learning of grammar intuitive rather than a highly abstract and rule-based process. The statistical gains, development of higher quality narratives, and generally positive learner perceptions all come together to confirm that VIPCALL is indeed a valid tool in enhancing grammatical accuracy and creative writing among EFL learners (Lathwesen & Belova, 2021; Albert et al., 2022).

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DISCUSSION

The findings of this study confirm that integrating visual-symbol-based grammar instruction into the VIPCALL platform significantly enhances the grammatical accuracy, syntactic fluency, and narrative coherence of EFL students. This immense improvement in students' performance, visible in the increase of "excellent" scores from 0% to 90% and the N-Gain value of 0.71, demonstrates the effect of multimodal visual scaffolding in facilitating learners to internalize and apply grammar rules in creative writing tasks. These gains, supported by both Table 2 and Table 3, align with prior arguments that visually encoded grammatical cues reduce cognitive overload and allow for more facilitative long-term retention (Bahari & Gholami, 2023).

These results are also in line with the Cognitive Theory of Multimedia Learning by Mayer (2024), which explains that learners internalize information better when it is presented both visually and verbally. In VIPCALL, tense timelines, adverb icons, and epithet sequences functioned as dual-coded cognitive tools, supporting students to "see" how grammar functions within narrative structures. This visual turn moved grammar from being an abstract rule set to a system of meaningful cues enabling sentence building and narrative flow (Vlachou et al., 2024). Students' reflections further corroborate this explanation, since most reported that the symbols helped them to think in English, not translate, when writing stories.

Constructivist learning theory thus provides a meaningfully explanatory framework for the gains observed by Arega & Hunde (2025). Grammatical understanding was constructed collaboratively through storytelling, symbol manipulation, and peer-supported revision rather than passively received in authentic contextual conditions. The VIPCALL learning environment allowed students to test hypotheses, correct mistakes through instant digital feedback, and negotiate meaning with peers in light of this more socially mediated knowledge construction. The demands of cooperative practice were required to support students in their metacognitive awareness toward making deliberate choices in tense use, adjective ordering, and conjunctions during fiction writing.

Such embedding of visual symbols into narrative tasks is also in tune with the basic tenets of the narrative-cognitive theory articulated by (Ramscar, 2023), who states that grammar becomes more meaningful when taught through story logic rather than in the framework of isolated sentences. In the present study, Snow White-themed storytelling activities offered learners a familiar narrative frame, freeing up cognitive attention to be invested in grammatical decision-making. Writing samples collected after the intervention revealed not only increased accuracy but also better plot coherence, more precise temporal sequencing, and richer descriptive detail, testifying that students were able to transfer symbol-supported grammatical awareness into extended narratives.

The inclusion of multimodal, game-based, and music-supported activities in VIPCALL contributed to lowering learners' affective filters. In line with Deane (2020), this play-driven environment did indeed encourage experimentation and reduce anxiety associated with grammar learning. The resultant 40% gain in engagement and retention confirms that when learners

perceive grammar activities as interactive and meaningful, their willingness to take linguistic risks increases. Students' qualitative feedback often referred to grammar becoming "fun," "manageable," and "less frightening," hence referring to a changed emotional relationship with language learning.

The coherence between digital interactivity and grammatical development also echoes the pedagogical value of computer-assisted learning platforms created by Bruno et al. (2023) and Ferreira & Qiu (2021). VIPCALL's multimedia offerings of symbol-matching games, sentence-building challenges, automated feedback, and collaborative writing spaces granted learners the chance to practice grammar repeatedly and contextually. Such functions assisted in narrowing the gap between declarative grammar knowledge and procedural fluency, thus accounting for the robust performance gains seen in areas such as sentence coherence, verb use, and adverb placement.

The DBR approach proved effective in shaping the final instructional model. Each implementation-reflection-refinement cycle identified classroom needs in real time. For instance, reorganization of tense visuals, addition of brainstorming activities, and "symbol dictionary" all constituted practical adjustments, directly informed by learner and lecturer feedback. The iterative responsiveness enhanced VIPCALL's usability and instructional alignment, pointing to the value of DBR in the development of scalable pedagogical innovations.

Overall, the findings presented here confirm that visual symbolism, multimodal inputs, collaborative learning, and iterative refinement indeed form a strong instructional environment that can transform grammar learning into an accessible and creatively productive practice. Embedding visual grammar cues into fiction writing tasks enhanced accuracy and helped students develop their narrative, confidence, and engagement with the writing task at hand (Suzuki, 2021; Babineau et al., 2024). These results thus confirm that VIPCALL effectively straddles the pedagogical divide that has traditionally separated grammatical precision from creative expression-the same divide often at the heart of EFL writing instruction.

CONCLUSION

This study has shown how the integration of visual grammar symbols within a digitally mediated multimodal learning environment-like VIPCALL-can significantly enhance both grammar mastery and creative writing performance among EFL students. In seeking to address the perennial tension between grammatical accuracy and narrative expressiveness, the model skilfully transformed abstract grammatical conceptualizations into tangibly accessible, visual tools to assist learners in comprehending and productively deploying language. Quantitative gains-evidenced by the significantly heightened post-test scores and the high N-Gain value-together with qualitatively positive results, confirm that visual-symbol scaffolding enhances both structural and creative dimensions of fiction writing when placed within a collaborative and interactive platform.

The efficacy of VIPCALL is based on its congruence with cognitive load theory, dual-coding principles, and constructivist pedagogical approaches. By

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delivering grammar via timelines, icons, visuals, and thematic story prompts, it reduced the cognitive barriers and allowed for learners to internalize grammatical structures within meaningful contexts. The collaborative storytelling activities and digital feedback loops further facilitated experimentation, metacognitive reflection, and sustained engagement that contributed to improvements in sentence coherence, descriptive detail, and narrative structure. These results confirm the benefits of multimodal and game-based approaches in grammar teaching, particularly for the students who usually struggle with rule-based, decontextualized methods.

The methodological value of the study lies in its elaboration of the Design-Based Research approach: its power to develop and refine an instructional model responsive to the demands of classroom realities. Iterative cycles of implementation, observation, feedback, and revision allowed VIPICCALL to emerge as a classroom-tested innovation supported by empirical evidence and theoretical grounding. Changes across these cycles, including revising the tense scale, creating a symbol dictionary, and refining task sequences, were made in service of forming an instructional model that is practical, user-friendly, and pedagogically coherent.

The results of this study contribute to the teaching of English by providing a feasible route for the integration of visual literacy and digital media into grammar instruction. The design of VIPCALL has shown how technology can support learner autonomy, collaborative meaning-making, and deeper engagement with linguistic form. Its flexibility also enables application across different learning contexts, including blended, flipped, and remote environments, making it a promising model for diverse educational settings.

Future research may study how far visual-symbol-supported grammar instruction generalizes to other genres, such as expository or argumentative writing, and evaluate longer-term retention of grammar skills beyond the intervention period. Further extensions of the model might include adaptive feedback systems or AI-driven grammar analysis for even more individualized feedback. Cross-institutional studies can determine how well VIPCALL generalizes across different cultural, linguistic, or proficiency contexts, including learners with specific learning needs.

In sum, this study confirms that when design, pedagogy, and digital innovation come together with a purpose, grammar instruction can break out of corrective routines into a more meaningful, engaging, and creative language-learning experience. VIPCALL offers a framework through which grammar becomes not a barrier to expression but a foundation for the development of confident, imaginative writers prepared for the demands of 21st-century communication.

AUTHOR STATEMENTS

Nur Antoni Eko Tanuso served as the principal investigator and lead author of this study. He conceptualized the research idea, designed the VIPICALL model, conducted the classroom implementation, collected and analyzed the data, and drafted the manuscript.

Yan Mujiyanto acted as academic supervisor and research advisor. He provided theoretical guidance, contributed to the refinement of the research design, and offered critical revisions to strengthen the conceptual and methodological framework of the study. **Rudi Hartono** contributed as research promoter and senior advisor. He provided scholarly input on the pedagogical framework, supported the interpretation of findings, and reviewed the manuscript to ensure academic rigor and coherence. **Hendi Pratama** served as co-supervisor and methodological consultant. He assisted in validating research instruments, contributed to data interpretation, and provided constructive feedback during the manuscript revision process.

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