



Creative Problem Solving Based Cerpenalyzer Interactive Web for Short Story Writing

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Abstract: Elementary school students frequently struggle with short story writing due to hurdles in plot conceptualization, structural organization, and a lack of interactive digital resources. This study aims to develop and evaluate the feasibility and practicality of Cerpenalyzer, an interactive web platform embedding the Creative Problem Solving (CPS) model to scaffold narrative instruction for fifth-grade elementary students. To address these limitations, this study engineered the Cerpenalyzer interactive web platform, embedding the Creative Problem Solving (CPS) model to scaffold narrative instruction. This research was conducted at SD Negeri Waringin II during the even semester of the 2025/2026 academic year. Utilizing a mixed-methods Research and Development (R&D) framework via the five-stage ADDIE model, data were gathered through diagnostic interviews, peer expert reviews, and user feedback surveys, and were analyzed using quantitative and qualitative descriptive analysis techniques. The developed application unifies scaffolded drafting tasks, multimedia components, educational mini-games, and an automated AI text-critique engine designed to refine grammar, structural flow, and intrinsic literary elements. Empirical evaluations proved the tool achieved high standards, securing readiness marks of 82.84% from content specialists and 96.67% from media design experts, classifying it as very feasible. Usability trials confirmed strong field utility, yielding practicality scores of 92.67% in a small-group pilot, 92.40% during full-scale deployment, and 99.33% from teacher response, placing it in the very practical tier. This finding suggest that Cerpenalyzer is an engaging medium for learning to write short stories with the potential to support students' creativity and independent learning.

Keyword : creative problem solving; elementary school; interactive web

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How to Cite :

Introduction

Writing stands as one of the most intricate language arts, demanding the seamless integration of linguistic, cognitive, and affective competencies to generate coherent and meaningful written texts (Mat et al., 2025). Through the act of writing, young learners are driven to systematically organize their ideas, articulate personal experiences, and communicate their thoughts while simultaneously fostering creative expression and higher-order cognitive faculties (Nugraheni et al., 2022). Furthermore, effective writing instruction guides students in constructing knowledge through a continuous cycle of strategic planning, drafting, refining, and reflecting upon their own

textual creations (Aufa et al., 2025). Consequently, mastering the written word serves as a foundational pillar for cultivating comprehensive literacy and analytical thinking within elementary education.

Developing short story writing skills represents a core milestone in language arts curricula, as it requires students to brainstorm fresh concepts, forge logical plots, flesh out distinct characters, establish vivid settings, and embed profound themes within an organized narrative framework. These instructional objectives mirror the core demands of modern twenty-first-century education, which places immense value on creative output, communicative skill, critical evaluation, and digital fluency (Aeni et al., 2024). In modern classrooms, digital tools have emerged as a vital mechanism for achieving these goals; interactive software environments naturally promote active student involvement, self-regulated study habits, and deep cognitive engagement with the curriculum. Web-based interactive platforms notably amplify learner motivation and enrich educational experiences by offering unrestricted, flexible access to rich multimedia study materials (Abdulrahaman et al., 2020). Virtual spaces that blend diverse digital functions effectively reinforce both the creative output and the technological literacy of young pupils (Enjang Yusup Ali et al., 2025; Quinio & Cuarto, 2025).

Field observations and structured dialogue with the teaching staff at SD Negeri Waringin II in April 2026 revealed that elementary school students still face formidable obstacles when attempting to craft short stories. Young writers frequently encounter barriers when trying to conceptualize and expand narrative themes, structure plots according to formal literary guidelines, weave in fundamental intrinsic elements, and adhere to proper grammatical conventions. These real-world observations align with the data presented by Maulina et al., (2021), which indicated that elementary short story outcomes generally plateau at a mediocre level. Similarly, international studies have highlighted notable disparities in narrative writing proficiency across different learner groups and school contexts, confirming that narrative competence remains highly uneven among young learners (Booton et al., 2025; Lillich et al., 2025). These collective insights underscore the urgent need for pedagogical breakthroughs that deliver structured, scaffolding support throughout the creative writing journey.

These persistent learning barriers stem directly from a lack of dynamic, interactive media options coupled with the prolonged reliance on traditional, teacher-centered instructional strategies. Conventional lecture methods typically fail to offer students sufficient room to explore imaginative ideas, construct compelling narrative conflicts, or resolve plot points independently and logically (Syahid et al., 2022). Conversely, purpose-built digital learning materials equipped with interactive components can streamline the writing journey by breaking the process into scaffolded tasks, offering instant diagnostic feedback, and providing flexible learning paths tailored to diverse learning speeds (Iswara et al., 2023). Web platforms give students the unique advantage of engaging with lesson content beyond the physical classroom, fostering a

habit of continuous independent practice (Quinio & Cuarto, 2025). Moreover, incorporating interactive digital resources has proven highly successful in boosting student enthusiasm, direct classroom engagement, and emotional confidence during language arts sessions (Nugraha et al., 2025).

The development of the *Cerpenalyzer* interactive web platform, paired with the *Creative Problem Solving* (CPS) model, explicitly targets these educational bottlenecks. This specialized platform provides a step-by-step digital architecture for cultivating core ideas, molding characters, building story arcs, generating text drafts, polishing prose, and accessing automated assessment feedback. Structurally, the CPS model guides learners through a sequence of interrelated stages clarifying the problem, generating ideas, developing solutions, and implementing a plan, a process shown to effectively support creative outcomes even among learners with no prior specialized training in the challenge domain (Mejía-Villa et al., 2023). Empirical evidence from a meta-analysis of 19 studies confirms that problem-solving pedagogy has a significant positive effect on students' creativity, with the strongest benefits observed among elementary school learners compared to older age groups (Zhan et al., 2024). The framework has also demonstrated strong validity in structured educational settings, where its five interrelated components problem identification, solution generation, insight, methods, and creativity were empirically confirmed to function cohesively across different educational roles (Charoentham et al., 2025). Recent scholarship further verifies that CPS triggers reflective cognitive habits and drives vibrant student collaboration during school activities (Nursi et al., 2025). These intrinsic qualities make the model uniquely suited for short story writing, where authors must regularly navigate and resolve plot-related dilemmas to secure narrative harmony.

Prior independent investigations have validated that both digital educational resources and the CPS framework can substantially elevate student learning metrics. For instance, interactive web tools have consistently demonstrated their power to maximize learner engagement and boost overall academic scores (Gonzales et al., 2026; Pigou & Liang, 2026). Meanwhile, digital storytelling approaches and technology-enhanced writing methodologies have shown great promise in strengthening original narrative output among school-aged children (Mahfudhoh & Nuroh, 2024; Masri et al., 2024). Additional literature confirms that digital storytelling tools can effectively upgrade narrative execution skills, with one study reporting that such an approach gave elementary learners the opportunity to gain improved communicative competence through creative writing, while also enhancing task engagement when delivered in a game-based format (Korosidou & Griva, 2024). Nonetheless, remarkably few academic attempts have concentrated on embedding the CPS framework within a custom interactive web environment tailored specifically for elementary school creative writing, representing the clear academic void that this investigation intends to bridge. The novelty of this study lies in its integration of the Creative Problem Solving model into a

purpose-built interactive web platform, *Cerpenalyzer*, which combines stage-by-stage narrative scaffolding (idea generation, characterization, plot construction, drafting, and revision) with automated assessment feedback, a combination that has not been previously developed or empirically tested for elementary school short story writing instruction.

This scientific endeavor sets out to analyze the baseline demands, design, build, validate, execute, and systematically evaluate the *Cerpenalyzer* interactive web platform based on the *Creative Problem Solving* paradigm as an innovative instructional medium for elementary school creative writing. The resulting data are expected to enrich the academic landscape regarding creative digital learning media that strengthen short story capabilities while simultaneously building student creativity, critical thinking, and digital intelligence. Furthermore, this newly engineered platform offers teachers a highly practical, technologically advanced instructional alternative designed to revolutionize language arts teaching in elementary education.

Methodology

This investigation utilized a mixed-methods approach embedded within a research and development (R&D) framework to engineer and systematically assess the *Cerpenalyzer* interactive web platform powered by the *Creative Problem Solving* (CPS) archetype for narrative writing instruction. The structural blueprint followed the ADDIE development framework incorporating *Analysis, Design, Development, Implementation, and Evaluation* owing to its reputation for providing a rigorous, step-by-step methodology for building, refining, validating, and testing educational materials (Abuhassna et al., 2024; Stofiana et al., 2026). The empirical phases took place during the second semester of the 2025/2026 academic calendar at SD Negeri Waringin II, located in Majalengka, West Java. This school was purposively selected as the research site based on several considerations: preliminary observations and interviews with the teaching staff indicated that students' short story writing achievement remained below the expected competency level; the school had not yet implemented any interactive digital learning media to support creative writing instruction; and the school administration and teachers expressed strong willingness to collaborate throughout the research process, including granting full access for piloting and trialing the *Cerpenalyzer* platform in actual classroom settings. Selection of the study cohorts relied on a purposive sampling strategy, which ultimately secured the participation of one elementary school teacher for the foundational needs assessment, two professional validators (specializing in instructional media and core content matter) for rigorous quality screening, six Grade V pupils for a preliminary small-group pilot, and thirty Grade V pupils for the full-scale classroom trial.

Information gathering relied on a combination of semi-structured face-to-face dialogue and structured evaluation forms. Detailed conversations with classroom

teacher occurred during the preliminary analysis phase to map out ongoing instructional challenges, isolate common student roadblocks in short story writing, and gauge the actual demand for technological learning platforms. The structured survey tools comprised formal expert verification matrices alongside user feedback sheets. The expert review criteria thoroughly scrutinized curriculum congruence, content accuracy, linguistic appropriateness, user interface mechanics, software functionality, and the overall usability of the newly developed website. Expert validation carried out using a five point likert scale as follows:

Table 1. Likert Scale

Score	Category
5	Very Good
4	Good
3	Fairly Good
2	Poor
1	Very Poor

The product validation data were then analysed using the feasibility percentage technique. The feasible percentage was calculated using the formula :

$$\text{Feasibility percentage} = \frac{\text{Total score obtained}}{\text{Maksimum score}} \times 100\%$$

The result were then interpreted based on the following criteria:

Table 2. Feasibility Interpretation Criteria

Percentage	Category
81-100%	Very Feasible
61-80%	Feasible
41-60%	Fairly Feasible
21-40%	Less Feasible
<20%	Not Feasible

To measure real-world practicality, teacher and student feedback sheets captured dimensions of visual appeal, navigation ease, pedagogical utility, and the holistic user experience during live classroom operations. These feedback instruments also employed the same five point likert scale used in the expert validation to quantify user satisfaction. The data were analyzed using the percentage technique with the formula:

$$\text{Feasibility percentage} = \frac{\text{Total score obtained}}{\text{Maksimum score}} \times 100\%$$

The result were then interpreted based on the following criteria:

Table 3. Practicality Interpretation Criteria

Percentage	Category
81-100%	Very Practical
61-80%	Practical
41-60%	Fairly Practical
21-40%	Less Practical
<20%	Not Practical

Strategic revisions based on expert diagnostic feedback were executed prior to releasing the web application to either the small-scale pilot or the broader implementation group.

Inductive analysis of the qualitative insights gained through diagnostic interviews progressed through a systematic process of data reduction, categorical display, and final verification. Concurrently, the quantitative metrics pulled from expert reviews and student-teacher surveys underwent descriptive statistical evaluation to determine aggregate percentage marks. Product validity parameters depended entirely on these expert-compiled indices, which translated directly into established readiness categories, whereas practical viability relied on user evaluations gathered post-implementation. Synthesizing these qualitative and quantitative streams yielded a comprehensive evaluation of the *Cerpenalyzer* web ecosystem, confirming both its technical readiness and its educational value as an interactive digital asset for upgrading elementary school creative writing output.

Result and Discussion

Finding

This scientific endeavor successfully engineered the *Cerpenalyzer* interactive web platform, driving short story instruction in elementary classrooms by anchoring its digital features within the *Creative Problem Solving* (CPS) architecture. The execution of this initiative progressed structurally through the five phases of the ADDIE paradigm: analysis, design, development, implementation, and evaluation.

1. Analysis

The initial investigative phase paired face-to-face interviews with two Grade V classroom teachers at SD Negeri Waringin II with a detailed examination of contemporary curricular frameworks. Both teachers offered convergent accounts, strengthening the credibility of the identified classroom needs. The field data exposed several structural bottlenecks currently hindering creative narrative instruction. Students frequently struggled to generate original plots, map out structural story milestones, incorporate core intrinsic narrative devices, and conform to formalized grammatical conventions. Both teachers also noted that student enthusiasm for writing remained low, driven by a scarcity of digital learning resources and a heavy structural reliance on

conventional, unidirectional teaching practices, and expressed shared interest in a responsive digital tool capable of scaffolding students through the writing process while sustaining their engagement.

Curricular analysis confirmed that short story writing is a core competency within the Indonesian Language Learning Outcomes for Phase C, which requires learners to creatively construct original narrative texts while mastering formal linguistic conventions. These diagnostic findings, corroborated by two teacher informants, established the instructional blueprint and justification for building the *Cerpenalyzer* web as a specialized vehicle for creative problem solving driven writing intervention.

2. Design

Guided by the diagnostic insights from the baseline needs assessment, the operational blueprint for the *Cerpenalyzer* web portal took shape by organizing core lesson content, system flowcharts, and detailed storyboards prior to initiating development. The storyboard functioned as the structural cornerstone for the software architecture, mapping out user interface layouts, navigation transitions, and the chronological learning progression across the homepage, reading modules, multimedia video systems, scaffolded drafting tasks, independent workspace, automated AI feedback, gamified activities, and developer documentation.

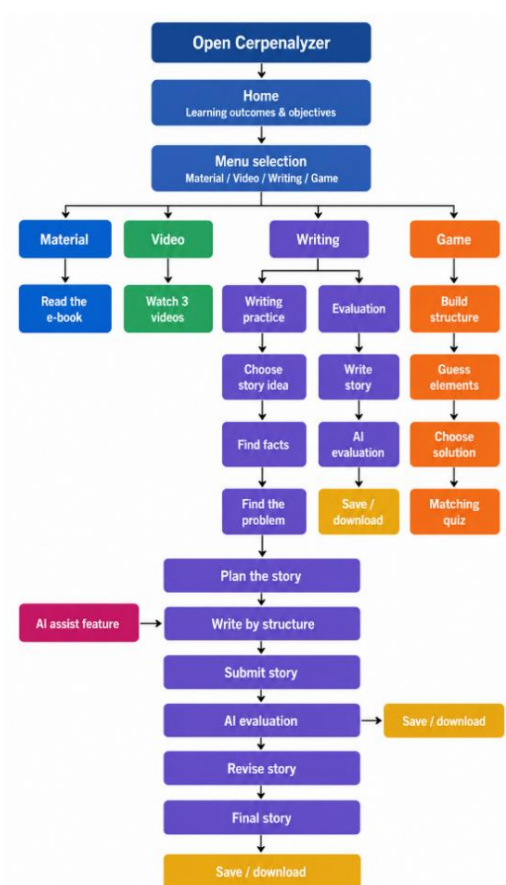


Figure 1. Flowchart of the Cerpenalyzer Interactive Web

The design framework further integrates digital learning texts tailored to the concept map of the material configured into e-book format.

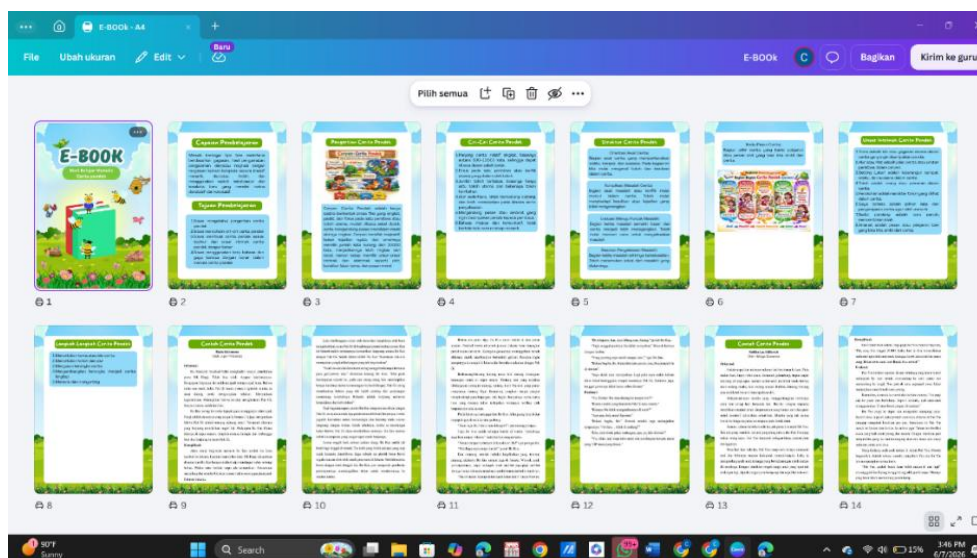


Figure 2. E-book Design of the Cerpenalyzer Interactive Web

3. Development

During the programming phase, the static storyboards were translated into a fully operational, web-native educational ecosystem. The *Cerpenalyzer* environment unifies e-book, instructional videos, scaffolded drafting tasks mirrored after the *creative problem solving* stages and independent writing environments.

The development of the *Cerpenalyzer* web app was carried out in stages, starting from setting up tools like Node.js, Visual Studio Code, and GitHub to the final deployment on the internet. This project consists of two main components: a frontend built with React and Tailwind CSS to ensure an interface suitable for elementary school students, and a backend built with Express.js to process data and interact with AI services. The backend supports three main functions: short story analysis, assistance in writing section by section, and automatic generation of opening sentences. The short stories submitted by students are processed by AI acting as an Indonesian language teacher, simultaneously evaluating four aspects: grammar, writing style, completeness of narrative structure, and intrinsic elements of the story. The results are displayed thru color-coded text highlighting and four analysis cards, equipped with functions for online reviews, PDF downloads, and evaluation history. After all functions were developed and tested, the frontend was implemented thru Vercel and the backend thru Render, making the complete *Cerpenalyzer* application accessible to students online.

Prior to field testing, the software underwent extensive evaluation by independent material and media panels to verify its structural readiness and pedagogical accuracy.

Table 4. Material Expert Validation Results

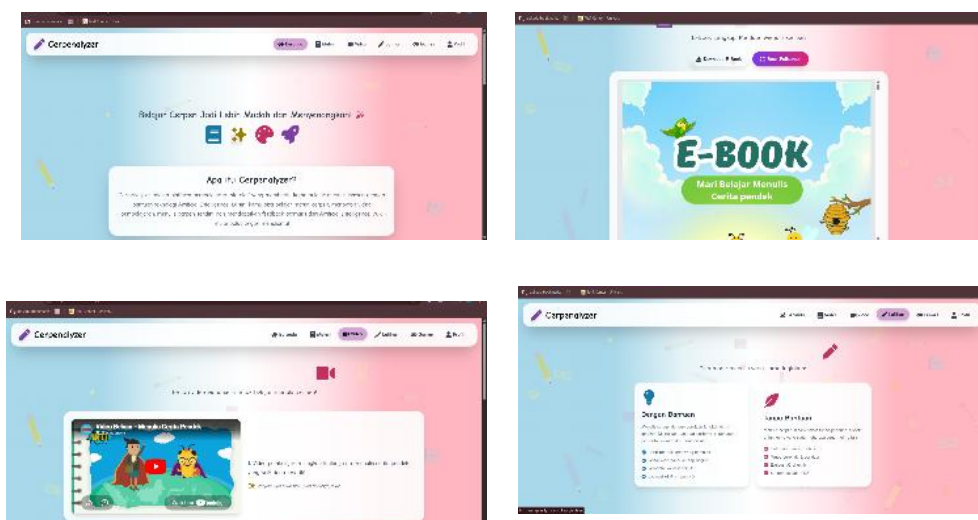
Validator	Percentage	Category
Validator 1 (before revision)	66.36%	Feasible
Validator 1 (after revision)	93.18%	Very Feasible
Validator 2	81.36%	Very Feasible
Validator 3	90.45%	Very Feasible
Average	82.84%	Very Feasible

The initial round of feedback recommended reinforcing the guided writing pathways by adding extra cognitive prompts to help young writers map out plot milestones and intrinsic structures more logically. These expert modifications were fully coded into the system before moving to the subsequent classroom rollouts.

Table 5. Media Expert Validation Results

Validator	Percentage	Category
Validator 1	91.67%	Very Feasible
Validator 2	100.00%	Very Feasible
Validator 3	96.67%	Very Feasible
Average	96.67%	Very Feasible

Media reviewers suggested minor structural enhancements regarding font configurations and clarifying the text labels underneath the educational videos. Following the successful execution of these technical adjustments, the platform was cleared for direct classroom deployment.

**Figure 3. Display of the Cerpenalyzer Interactive Web**

4. Implementation

The optimized version of the *Cerpenalyzer* engine entered the live classroom through a two-tiered field test, beginning with a small-scale focus group of six Grade V pupils and culminating in a broad deployment with thirty Grade V students. Both teachers and pupils filled out descriptive usability questionnaires upon completing the designated instructional units

Table 6. Teacher Response Results

Respondent	Percentage	Category
Teacher VA	98.67%	Very Practical
Teacher VB	100.00%	Very Practical
Average	99.33%	Very Practical

Participating teachers indicated that the web application integrated seamlessly into existing daily lesson plans, offered valuable independent scaffolding to young writers during creative tasks, and measurably revitalized classroom attentiveness.

Similarly, feedback collected from the student body reflected highly enthusiastic attitudes toward the newly introduced digital tool.

Table 7. Student Response Results

Trial	Percentage	Category
Small-group	92.67%	Very Practical
Large-group	92.40%	Very Practical
Average	92.53%	Very Practical

Pupils classified the platform as visually compelling, highly intuitive, and effective for overcoming creative blocks, organizing subplots, and addressing basic spelling or sentence flaws. Suggestions harvested from the initial small-scale cohort were strategically addressed to polish the interface features prior to initiating the wide-group implementation.

5. Evaluation

The terminal phase synthesized the cumulative feedback gathered from validation teams, teacher surveys, student reviews, and the iterative software updates. The material expert validation result of 82.84%, while technical media validation reached an optimal 96.67%, solidifying both dimensions within the *Very Feasible* classification. On the dimension of user experience, teacher response generated a stellar practicality average of 99.33%, while student response recorded a strong 92.53%, placing both indicators squarely in the *Very Practical* domain. These collective metrics confirm that the *Cerpenalyzer* platform, fortified by the *Creative Problem Solving* model, fully satisfies

the strict demands of academic feasibility and technical utility, making it an excellent digital asset for reforming short story instruction within elementary school language arts programs.

Discussion

1. Needs Analysis for Developing the Cerpenalyzer Interactive Web Based on Creative Problem Solving

The foundational investigation indicated that narrative writing instruction for fifth-grade pupils at SDN Waringin II had not reached its full potential. Students faced considerable hurdles when attempting to brainstorm original storylines, construct grammatically sound sentences, and grasp core plot mechanics alongside fundamental literary components like theme, backdrop, storyline, character development, point of view, and underlying moral lessons. These baseline insights mirror the assertions of Mat et al. (2025), who characterized writing as an intricate mental exercise that demands linguistic mastery, analytical processing, and a systematic progression from initial planning to final proofreading. Consequently, the writing impediments displayed by students went beyond mere mechanical language errors, directly involving the high-level cognitive processing required to orchestrate a compelling story.

The diagnostic data also shed light on internal dynamics governing authoring proficiency, particularly regarding the cognitive and technical faculties needed to organize ideas, deconstruct story structures, and apply rules of grammar with precision (Chico, 2022). Furthermore, student apathy toward writing tasks was heavily exacerbated by a noticeable absence of modern, interactive educational tools and an ongoing reliance on traditional, teacher-led lecturing models. This matches the observations of Bakar (2025), who noted that a lack of strategic pedagogical scaffolding and limited engagement with creative prose generation diminish students' narrative performance. Similarly, Aufa et al. (2025) maintained that writing enthusiasm is nurtured through persistent, hands-on practice reinforced by scaffolded learning pathways.

Additionally, diagnostic dialogues with teachers exposed an immediate demand for a responsive digital resource that could guide young learners step-by-step through the writing experience while offering operational flexibility and boosting student interest. This instructional objective directly corresponds with the Indonesian Language Learning Outcomes delineated for Phase C, which require pupils to compose imaginative texts rooted in personal insights, real-world experiences, and creative vision. Accordingly, the results of this preliminary analysis provided a compelling rationale for engineering the *Cerpenalyzer* interactive web framework, embedding the *Creative Problem Solving* (CPS) architecture to foster organized and rewarding creative writing sessions.

2. Design and Development of the Cerpenalyzer Interactive Web Based on Creative Problem Solving

The initial design phase focused on constructing structural concept maps, navigation flowcharts, and detailed storyboards to ensure that every aspect of the web application targeted the specific learner deficiencies uncovered during the analysis stage. The overarching concept map was structured around Phase C curricular benchmarks, incorporating definitions of the short story genre, plot architectures, core intrinsic features, step-by-step drafting rules, and curated text samples. This structural alignment guaranteed that the instructional content conformed to national curriculum goals while scaffolding the students' grasp of original storytelling.

The system flowchart was mapped out to visualize student navigation across the platform, giving learners the freedom to explore reading materials, instructional videos, writing workspaces, and educational games at their own pace. Concurrently, the storyboard mapped out the full learning progression, beginning with brainstorming sessions, moving through fact-gathering, problem mapping, story outlining, guided composition, AI-driven critique, editing, and final submission. These instructional milestones were purposefully modeled after a well-established six-stage creative problem-solving process, comprising mess finding, data finding, problem finding, idea finding, solution finding, and acceptance finding, a sequence shown to structure classroom creative tasks by guiding learners step by step from initial exploration to a validated final (Karlina et al., 2023). Thus, the storyboard served as both a user interface blueprint and a conceptual bridge for embedding CPS logic directly into the software.

The subsequent development phase transformed these static blueprints into an active, web-accessible software application, utilizing React.js for frontend mechanics and Node.js/Express for backend processing. Google Gemini AI was integrated to deliver instantaneous diagnostics on grammar, stylistic choices, story progression, and intrinsic plot dynamics, with Groq AI serving as a robust fallback system. This AI-powered diagnostic infrastructure allowed students to access immediate corrections and revision ideas as they composed, exemplifying a core benefit of modern web-based learning. Moreover, diverse multimedia elements including custom e-books, educational video segments, and gamified tasks were woven into the system to offer a rich, multimodal learning environment that maximized student engagement (Saputro et al., 2022).

The initial validation metrics confirmed that the newly engineered tool achieved high quality standards. Content specialists awarded the platform an average feasibility rating of 82.84%, while multimedia design experts evaluated it at an average score of 96.67%, placing both dimensions within the *very feasible* category. Constructive feedback from the validation panels such as embedding extra scaffolding tasks, opti-

mizing text typography for readability, and clarifying instructional prompts was carefully integrated into the final deployment version. These modifications successfully raised both the pedagogical soundness and the technical performance of the *Cerpenalyzer* digital workspace.

3. Implementation of the Cerpenalyzer Interactive Web Based on Creative Problem Solving

The rollout phase consisted of a small-scale pilot involving six pupils, a full-scale classroom implementation with thirty students, and response from fifth-grade teachers. The small-group trial yielded a strong practicality rating of 92.67%, proving that young users found the platform visually appealing, easy to navigate, and highly supportive during structured writing tasks. User feedback harvested during this initial run pointed to a need for more balanced interface color schemes and additional gamified modules, both of which were integrated before initiating the larger trial.

Following these user-centric updates, the full-scale classroom rollout generated a consistent practicality rating of 92.40%, confirming the stability of the students' positive experiences. Pupils noted that the scaffolded writing tasks, immediate AI text critiques, and integrated games helped them independently brainstorm subplots, organize narrative chapters, and self-correct grammatical slips. These real-world outcomes corroborate the findings of Nugraha et al. (2025), who observed that responsive web-native learning tools significantly spark student drive and focus, and align with Dini et al., (2023), who emphasized the value of versatile digital workspaces for writing instruction.

Evaluations from classroom teachers were similarly exceptional, yielding an average practicality rating of 99.33%. Teachers found the platform highly suitable for standard classroom use due to its alignment with curriculum benchmarks, its ability to streamline teacher guidance, and its success in promoting vibrant student participation during writing blocks. These observations reinforce previous research indicating that modern educational technologies can stimulate innovative thinking and make daily classroom instruction more efficient (Enjang Yusup Ali et al., 2025; Shalgimbekova et al., 2024). Collectively, the field results demonstrate that combining the CPS model with an interactive web layout creates a deeply rewarding educational experience for teachers and students alike.

4. Evaluation of the Cerpenalyzer Interactive Web Based on Creative Problem Solving

The final evaluation phase reviewed data from validation results, field-testing outcomes, and response from teachers and students. Several strategic refinements were introduced, including the addition of structural scaffolding elements, the polish-

ing of instructional video content, the optimization of visual indicators for AI text highlighting, and the expansion of educational games. These targeted updates enhanced both the technical usability and the educational depth of the website, making it highly appropriate for elementary school learners.

Overall, the *Cerpenalyzer* interactive web platform secured definitive classifications of *very feasible* and *very practical*, proving that it successfully met the criteria for an efficient digital learning asset. The automated AI evaluation engine allowed young authors to catch syntax errors, improve narrative flow, and edit their drafts independently, while the underlying CPS phases trained them to solve plot dilemmas systematically and creatively throughout the writing process.

These cumulative findings show that embedding the *Creative Problem Solving* architecture within a responsive web layout provides students with the structured guidance and immediate feedback loops necessary to build strong narrative writing skills. This aligns with a robust body of literature demonstrating that the CPS model yields measurable gains in student writing quality and creative thinking capacity (Artini, 2022; Rahmawati et al., 2022; Satria & Muntaha, 2022). Consequently, the *Cerpenalyzer* platform represents a major technological step forward for elementary school language arts, offering an innovative tool that advances the cause of technology-enhanced literacy instruction.

Conclusion

This research endeavor successfully engineered the *Cerpenalyzer* interactive web platform to enhance short story writing instruction in elementary classrooms. Anchored in the Creative Problem Solving (CPS) framework and developed through the five phases of the ADDIE model, the platform was specifically designed to address documented student learning difficulties. It integrates scaffolded writing tasks, rich multimedia resources, gamified activities, and an automated AI-driven text analysis feature to support the development of students' narrative writing skills.

Rigorous expert validation confirmed that the platform meets high quality standards, achieving a very feasible category with 82.84% from content experts and 96.67% from media design experts. Field testing further demonstrated strong practicality, with scores of 92.67% in the small-scale pilot, 92.40% in the large-scale implementation, and 99.33% from the participating teacher.

Nonetheless, several limitations of this study should be acknowledged. First, the trial was conducted at only one elementary school (SD Negeri Waringin II), which may constrain the generalizability of the findings to schools with different demographic, geographic, or socio-economic characteristics. Second, the relatively small sample size, six pupils in the preliminary pilot and thirty pupils in the large-scale trial, limits the statistical robustness and broader applicability of the results. Third, although the platform utilizes Google Gemini AI (with Groq AI as a fallback) for automated text

critique, this study did not perform a separate empirical evaluation comparing the accuracy and pedagogical appropriateness of AI-generated feedback with human expert assessments (teachers or linguists), representing a reliance on third-party AI infrastructure that is beyond the researchers' direct control.

In light of these limitations, future research is recommended to conduct long-term effectiveness trials to determine whether the improvements in students' short story writing skills observed in this study are sustained over extended periods, to replicate this study across multiple schools with more diverse student populations to strengthen the generalizability of the findings, and to empirically validate the reliability and pedagogical accuracy of the AI-generated feedback against human expert judgment.

Overall, these collective findings indicate that the Cerpenalyzer platform is highly user-friendly, engaging, and effective in supporting creative writing activities. Therefore, it stands as a viable and innovative educational tool capable of advancing technology-enhanced literacy and transforming short story instruction in elementary education.

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