



Integrating STEAM and multimodal digital prompts for grade 5 creative poetry writing

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Article info	Abstract
Keywords: creative poetry writing, multimodal digital media, STEAM-based instruction.	This qualitative descriptive-exploratory study documents the enactment of STEAM-oriented language arts instruction, supported by LCD-projected multimodal digital prompts, to scaffold Grade 5 creative poetry writing in one Indonesian elementary classroom. Addressing limited operational clarity in prior studies on digital media for poetry learning, particularly regarding stage-specific prompt functions and replicable sequencing, the study contributes a six-session instructional model specifying how prompts support observation, drafting, and revision. Data were drawn from classroom observations, semi-structured interviews with teachers and students, and analysis of poetry artefacts; a 1–4 rubric (diction, imagery, thematic alignment, originality) was used strictly for descriptive profiling. Findings are reported as data-grounded patterns: participants described prompts as useful entry points for initiating writing and elaborating imagery, while artefact excerpts indicate movement from general evaluative phrasing toward more specific sensory and figurative language, with variation across students. Interpretations remain bound to the single-classroom context and do not constitute causal or comparative claims.

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1. Introduction

Instruction in elementary Indonesian, particularly in creative poetry writing, continues to face persistent pedagogical and contextual challenges. Classroom practice is often described as teacher-centered and form-focused, emphasizing normative mastery of poetic structures while leaving limited space for students' composing processes. Under such conditions, poetry writing

may be experienced as difficult and rigid, limiting learners' opportunities to express ideas, emotions, and imagination through writing (Graham & Hebert, 2011; Graham et al., 2016). Indonesian studies similarly report challenges in sustaining engagement and creative literacy in primary language classrooms, while media integration remains limited and uneven (Mufidah, Kusumaningrum, & Dewi, 2022; Afifah et al., 2024).

In the present study context, interview data provide direct evidence that the entry point of composing, starting to write, and generating language was a salient difficulty. The classroom teacher stated, "Children are more confident to write poetry when they are given visual media and sound as idea triggers," and one student noted, "When we use nature videos, it becomes easier for me to imagine poetry words." Another student added, "I like writing poetry after doing a small project, because the poem feels more real". These accounts do not imply causal effects, but they clarify the kind of support perceived as helpful in overcoming initial composing hesitation and strengthening experiential grounding.

Baseline artefacts collected prior to Session 1 further illustrate students' starting points in poetic products. A baseline excerpt shows general evaluative phrasing with limited sensory elaboration: "*Aku suka bunga di taman / Warnanya indah setiap hari / Aku senang melihatnya / Bunga membuatku bahagia*". Including such artefact-based illustration strengthens the problem rationale by grounding it in classroom evidence rather than relying primarily on generalized claims from prior literature.

At the same time, contemporary learners increasingly inhabit digital environments where multimodal meaning-making (images, sound, interactive media) is commonplace, yet digital media in Indonesian language instruction is often minimal or instrumental, limiting its role as a creative composing resource (Kress, 2010; Warschauer, 2011). While multimodal prompts have been reported as generative supports for idea development and engagement during composition (Schindler et al., 2017), Indonesian studies on digital media in poetry learning often focus on isolated literacy components (frequently reading-oriented) and do not specify how multimodal resources are embedded across composing phases (Mufidah et al., 2022; Afifah et al., 2024). In parallel, STEAM has been linked to creativity and higher-order thinking, but operational clarity and replicable enactment in language arts remain limited (Henriksen, 2017; Mayer, 2009).

These classroom-grounded indications and gaps in the prior literature point to the need for a descriptive account of how STEAM-oriented multimodal scaffolding is operationalized across the stages of poetry composition. This study addresses an under-specified area: how STEAM principles and multimodal digital prompts can be operationalized within language arts as a coherent, replicable sequence that supports Grade 5 poetry composing across stages (exploration, drafting, and revision). Rather than testing causal effects, the study uses a qualitative descriptive-exploratory design to document how a six-session instructional model is enacted and to identify data-grounded descriptive patterns in students' composing experiences and poetry artefacts using observations, interviews, and document analysis; rubric profiling is included strictly as supportive descriptive evidence. Accordingly, the study asks: (1) How is STEAM-oriented instruction operationalized across a six-session sequence to support Grade 5 poetry writing? (2) What descriptive patterns characterize students' composing experiences with multimodal digital prompts? Furthermore, (3) What descriptive patterns are evident in students' poetic products (diction, imagery, thematic alignment, originality) as supported by qualitative evidence and rubric-informed descriptive profiling?

2. Literature review

2.1 Writing process-based creative writing and poetry writing in grade 5

Writing in elementary school is increasingly framed as a process of meaning-making rather than the production of correct linguistic forms. In social-constructivist terms, children's composing develops through interaction, scaffolding, and engagement with meaningful experience across phases such as generating ideas, drafting, revising, and sharing texts (Kress, 2010). In creative writing, affective involvement and imaginative exploration are central; instruction that emphasizes rigid form without supporting composing processes may constrain confidence and originality (Graham & Hebert, 2011; Graham et al., 2016). Poetry writing is particularly demanding because it requires students to coordinate condensed language, imagery, diction, and emotion. For Grade 5 learners, this calls for pedagogical designs that provide concrete supports for ideation and language experimentation while guiding students toward coherent theme development and craft.

In Indonesian elementary contexts, poetry instruction is often reported as form-focused, emphasizing structure and definition rather than sustained composing. Studies indicate that learning media can support poetry-related literacy when integrated intentionally; for example, digital visualization media have been reported to support poetry learning activities (Mufidah et al., 2022). However, evidence remains limited regarding how such media can be systematically embedded across composing stages to support poetry writing, not just reading or general engagement.

2.2 Visual multimodality and digital image prompts as composing scaffolds

Multimodality refers to meaning-making through multiple semiotic resources (written language, images, sound, movement, spatial design). In literacy learning, multimodal resources can function as generative prompts that support idea development, imagery building, and engagement, especially for young writers who benefit from concrete stimuli to access experiences and emotions during composing (Kress, 2010; Schindler et al., 2017). For Grade 5 poetry writing, visual prompts are relevant because they can support noticing, describing, and imagining processes closely linked to imagery and diction.

Importantly, the pedagogical value of images is not automatic; image prompts become productive writing resources when teachers orchestrate them through purposeful selection, guiding questions, peer discussion, and revision routines that connect visual cues to language choices. In Indonesian settings, digital visual media have been documented as contributing to engagement and learning outcomes in poetry-related activities (Mufidah et al., 2022). However, a gap remains in specifying how image-based prompts function across composing phases (exploration, drafting, revision) and how they shape students' composing experiences and poetic products.

2.3 STEAM as an integrative framework for language arts

STEAM integrates Science, Technology, Engineering, the Arts, and Mathematics as a framework for inquiry, creativity, and higher-order thinking. While STEAM is commonly implemented in STEM-oriented subjects, its application in language and literacy education remains comparatively limited (Henriksen, 2017). A persistent challenge is operational clarity: activities may be labeled "STEAM" without specifying what each component looks like in concrete classroom actions or how integration supports particular literacy goals (Mayer, 2009). This challenge becomes more salient in language arts, where "Science," "Engineering," and "Mathematics" can appear forced if not grounded in authentic literacy practices.

To avoid overclaiming, STEAM in language learning can be framed as a design principle that enriches literacy through inquiry and creativity. In poetry writing, STEAM is meaningful when each

component is translated into classroom practices that support composing for example, observation/inquiry to generate themes, digital tools to provide shared multimodal prompts, iterative design and revision to refine poetic structure, artistic expression to cultivate imagery and voice, and pattern-based organization (used cautiously) to support stanza or repetition.

2.4 Operational framework: from theory to design decisions and analytic indicators

Based on the literature above, this study adopts an operational framework that links theory to the design of a six-session sequence and to the indicators used for analysis. First, STEAM is operationalized in language arts as a purposeful integration of inquiry/observation, classroom technology, iterative design/revision, aesthetic expression, and cautious use of patterning to support Grade 5 poetry composing (Henriksen, 2017; Mayer, 2009). Second, the multimodal digital tool is defined narrowly as curated digital images projected via LCD to function as shared prompts; their role is specified by the composing phase (e.g., supporting observation and theme selection; supporting drafting through sensory detailing; supporting revision by re-checking coherence between theme and diction/imagery) (Kress, 2010; Schindler et al., 2017). Third, poetic product interpretation is guided by four analytic indicators: diction, imagery, thematic alignment, and originality, which align with common descriptors of quality in creative writing and poetry composing (Graham & Hebert, 2011; Graham et al., 2016).

2.5 Synthesis: research gap and study positioning

The literature review identifies three gaps that justify the present study. (1) Poetry instruction in elementary contexts often remains form-centered, while process-based support across composing phases is underdeveloped in everyday practice. (2) Although digital image prompts can plausibly function as composing scaffolds, prior studies have not sufficiently specified how such prompts are embedded systematically across phases of poetry writing in Indonesian elementary classrooms (Mufidah et al., 2022; Afifah et al., 2024). (3) STEAM integration in language arts is rarely operationalized transparently in ways that yield a coherent and replicable instructional sequence (Henriksen, 2017; Mayer, 2009). Accordingly, this study is positioned at the intersection of STEAM operationalization in language arts, LCD-projected digital image prompts as multimodal scaffolds, and Grade 5 creative poetry writing as creative literacy. This framework informs the six-session procedure and grounds analysis of composing experiences and artefact-based descriptive patterns.

3. Method

This study used a qualitative–descriptive–exploratory design to document how STEAM-oriented Indonesian language instruction supported by multimodal digital image prompts (LCD-projected) is enacted in teaching Grade 5 creative poetry writing. The approach was chosen to foreground classroom meaning-making, students' composing experiences, and instructional interactions without testing causal effects (Creswell, 2014; Merriam & Tisdell, 2016; Miles).

The study took place in one Grade 5 Indonesian language classroom at State Elementary School 006 Langgini, Bangkinang, Indonesia. Participants included one classroom teacher and 12 students (ages 10–11) from an intact class. The class/teacher was selected purposively based on LCD projector availability, feasibility for implementing a six-session sequence, and teacher readiness (Patton, 2015). The teacher facilitated instruction; the researcher served primarily as a non-participant observer and analyst, collaborating only in planning. To reduce bias, the study used

reflexive memos to distinguish between description and interpretation, triangulation across sources, peer debriefing on coding, and negative case analysis.

The intervention consisted of six 70-minute sessions using curated digital images projected via LCD as shared multimodal prompts. Images were selected for age appropriateness and alignment with lesson objectives and sourced from self-produced or openly licensed materials. STEAM was operationalized as: Science (guided observation/inquiry from images), Technology (LCD-projected images), Engineering (iterative drafting and revision), Arts (diction, imagery, voice), and Mathematics (patterning/structure of lines/stanzas where relevant, without overstated claims). The session sequence is summarized in Table 1 to support replicability.

Data were triangulated across (a) classroom observations, (b) semi-structured interviews, and (c) document/artefact analysis. Observations were conducted in all six sessions using a structured guide to capture STEAM enactment, prompt use across composing phases, teacher scaffolding, student engagement, and peer interaction; data were recorded as field notes. Semi-structured interviews were conducted with the teacher and with a purposive student sub-sample (n=6) selected to represent variation in engagement and composing challenges (e.g., difficulty generating ideas or selecting diction). Student interviews (10–15 minutes) were conducted after the six-session sequence; the teacher interview lasted 30–45 minutes. Core prompts included: (1) what helped students start writing, and what was difficult, (2) how projected images influenced ideas/diction/imagery, and (3) which composing phase was hardest and why. Interviews were audio-recorded with permission, transcribed in Indonesian, and selectively translated into English; translations were checked for meaning equivalence. Artefacts included baseline poems collected prior to Session 1 and final poems after Session 6, alongside drafts/revisions produced during the sequence (total analysed poems: 36).

To complement qualitative interpretation (not for inferential testing), poems were descriptively profiled with a 1–4 rubric covering diction, imagery, thematic alignment, and originality. Anchors were specified for each level: Level 1 indicates minimal specificity/imagery/theme unity/originality; Level 2 indicates emerging but inconsistent; Level 3 indicates generally clear/vivid/coherent; Level 4 indicates sustained vivid diction/imagery, strong thematic unity, and distinctive expression. A single rater conducted rubric scoring (the researcher), acknowledged as a limitation. Consistency was supported through an explicit scoring decision log and an intra-rater check (re-scoring a subset after a time interval and reconciling discrepancies using anchored descriptors). Rubric results were reported only as descriptive summaries (medians/category proportions).

Data were analyzed iteratively through thematic analysis, integrating observation notes, interview transcripts, and poem excerpts (Miles et al., 2014). Open coding and codebook refinement produced themes describing prompt-mediated composing experiences, teacher scaffolding, revision routines, and constraints; negative cases were examined to refine claims. Trustworthiness was strengthened through source triangulation, peer debriefing, an audit trail (field notes, memos, codebook versions, rubric logs), and a limited credibility check with the teacher for factual accuracy and plausibility (Creswell, 2014; Patton, 2015; Merriam & Tisdell, 2016).

Formal ethics committee/IRB review was not required for this minimal-risk classroom-based study conducted as part of regular instruction; nevertheless, recognized standards for research with children were followed. Written authorization was obtained from the school principal; informed consent from the teacher(s) and guardians; and child assent via an age-appropriate explanation of the study, voluntariness, and the right to withdraw without consequences; assent was documented verbally and noted in field records. Identities were anonymized, data were stored securely, and digital prompts were copyright-compliant and child-safe.

4. Results

This section reports empirical findings from (a) classroom observations across six instructional sessions, (b) semi-structured interviews with teachers, students, and stakeholders, and (c) analysis of student poetry artefacts produced before and after the STEAM-oriented sequence supported by LCD-projected digital prompts. To maintain objectivity, results are presented as observed and reported; interpretive connections to prior literature are reserved for the Discussion. Interview excerpts were collected in Indonesian and translated into English by the authors. Participants are anonymized using role codes: Classroom Teacher (CT), Indonesian Teacher (IT), Supporting Teacher (ST), Principal (P), and Students (S).

4.1 Multimodal prompts and students' entry into composing (including varied responses)

Interview accounts consistently described multimodal prompts as helpful entry points for beginning to write and generating ideas. The classroom teacher reported:

CT (Interview): *"Children are more confident to write poetry when they are given visual media and sound as idea triggers."*

A student similarly stated:

S (Interview): *"When we use nature videos, it becomes easier for me to imagine poetry words."*

To capture variation, additional student accounts indicated that prompts did not uniformly resolve word-choice difficulties. One student explained that, although images helped generate ideas, selecting precise diction remained challenging during drafting and revision. By contrast, another student reported that visual prompts and discussion helped them move beyond general words toward more specific images, particularly after receiving feedback. Classroom observations across sessions reflected this variability: many students used prompts to expand vocabulary and imagery, while a smaller number continued to rely on general descriptors and required repeated teacher scaffolding.

4.2 STEAM-oriented learning as an experiential context for meaning-making

Participants described STEAM-oriented activities as extending poetry writing beyond language form toward observation, creativity, and experiential grounding. The Indonesian language teacher emphasized:

IT (Interview, translated): *"The STEAM approach makes poetry not only about language, but also about creativity and scientific observation."*

Students also described project-oriented activities as providing concrete writing experiences. One student noted that after observing and discussing images and activities, the poem felt "more real" and easier to elaborate. Observation notes documented recurring routines consistent with this framing, including guided noticing questions, vocabulary banking, peer meaning negotiation, and iterative drafting and revision.

4.3 Stakeholder perspectives on contextual relevance

School-level stakeholders framed multimodal media as aligning poetry learning with children's contemporary worlds. The principal stated:

P (Interview, translated): *"Digital media helps literature learning become more contextual and suitable for children's world today."*

The supporting teacher observed differences in the texture of students' poems after STEAM-oriented activities:

ST (Interview, translated): *"Poems written after STEAM activities are usually richer in imagery and not monotonous."*

These statements are reported as stakeholder perceptions and are considered alongside artefact evidence.

4.4 Artefact evidence across students

Artefact analysis compared baseline poems (collected prior to Session 1) with poems produced after Session 6. Excerpts are anonymized and presented as short text segments.

Pair 1

Baseline excerpt:

*"Aku suka bunga di taman
Warnanya indah setiap hari
Aku senang melihatnya
Bunga membuatku bahagia"*

Final excerpt:

*"Kelopak merah menari di bawah cahaya matahari
Seperti lampu kecil dalam laboratorium alam
Angin berbisik membawa aroma kehidupan
Taman menjadi puisi yang hidup di layar dan nyata"*

Pair 2

Baseline excerpt:

*"Aku suka hujan di sore hari
Airnya turun dari langit
Aku senang mendengarnya
Hujan membuatku tenang"*

Final excerpt:

*"Rintik hujan mengetuk atap seperti jemari halus
Menyapu debu panas di halaman yang letih
Aroma tanah bangun, mengirim pesan pelan
Sore menjelma kelas sunyi: aku belajar tenang dari langit"*

Pair 3

Baseline excerpt:

*"Aku suka pantai yang luas
Pasirnya putih dan lembut
Aku senang bermain ombak
Pantai membuatku gembira"*

Final excerpt:

*“Ombak menulis garis putih di papan pasir
Kerang kecil menyimpan rahasia suara laut
Angin asin menempel di bibir seperti cerita
Pantai menjadi buku terbuka: aku membaca gembira tanpa selesai”*

Across these pairs, baseline poems tend to rely on general evaluative statements ("aku suka...", "membuatku gembira/tenang"). In contrast, final poems more frequently display specific sensory and figurative language ("rintik hujan mengetuk atap", "ombak menulis garis putih"), scene-based coherence, and metaphorical framing. Observation and interview data indicate that such development was uneven across students; at least one student continued to rely on general diction despite prompts and feedback, indicating a counter-case of limited change (described but not excerpted here for brevity).

4.5 Rubric-based descriptive profiling

Rubric profiling was used strictly as supportive descriptive evidence. Descriptively, baseline poems were more frequently categorized at Levels 1–2 (very limited to emerging) across diction and imagery, whereas final poems were more often categorized at Levels 3–4 (good to very good), particularly for imagery and thematic alignment. Originality showed more modest shifts, with several students remaining at emerging levels. These summaries are reported descriptively, without inferential claims.

5. Discussion

5.1 Operationalizing STEAM routines in language-arts composing

A key contribution of the study is the documentation of a session structure that makes STEAM "visible" in language arts. Rather than treating STEAM as an add-on, the lessons enacted an inquiry cycle—guided noticing, vocabulary banking, drafting, and revision—that resembles design-based learning processes (Oliveri et al., 2023) while remaining consistent with process-oriented writing models in which planning, translating, and reviewing are recursively coordinated (Flower & Hayes, 1981; Hayes, 2012; Kellogg, 2008). In practice, STEAM surfaced when students were prompted to observe details (science), discuss and test word choices (engineering-like iteration), attend to aesthetic effects (arts), and make a basic sense of patterning and relationships in imagery (mathematics), supported by routine uses of digital tools (technology) (Yakman & Lee, 2012).

Importantly, the routines not only structure activities; they also lower entry barriers for novice poets by distributing cognitive demands over time. Explicitly sequencing noticing → word collection → line drafting → focused revision aligns with evidence that structured, explicit instruction improves students' writing quality and their ability to manage the writing process (Graham, 2018; Graham et al., 2012). This sequencing also helps explain why stakeholders described the lessons as "more contextual" and why students reported greater confidence: a stable routine can reduce uncertainty while allowing creativity to develop within manageable constraints. Building on this foundation, the next section considers why shared multimodal prompts were particularly productive for initiating and enriching poems.

5.2 How shared multimodal prompts mediated composing experiences

Interview and observation accounts indicate that multimodal prompts supported idea generation and imagination, consistent with theories that combining verbal and visual channels can

deepen mental model construction when materials are well-aligned (Mayer, 2005; Paivio, 1991). From a cognitive load perspective, prompts may have reduced "search" costs during planning—students did not need to invent a scene from scratch—while still leaving room for elaboration through sensory detail and metaphor (Sweller, 2011). This mechanism fits the descriptive pattern in the results: students could begin faster and sustain writing longer, and teachers perceived richer imagery in final products. Such engagement effects are also consistent with reviews showing that technology-mediated resources can support behavioral, cognitive, and affective engagement when the classroom tasks are purposeful and structured (Schindler et al., 2017).

At the same time, variation in student reports—especially difficulties with precise diction—highlights an important boundary condition. Visual and audiovisual prompts can provide content, but they do not automatically supply the lexical and rhetorical resources needed to express nuance; therefore, prompts need to be paired with explicit language work (e.g., synonym exploration, figurative language mini-lessons, and targeted revision moves) (Graham, 2018). Evidence from Indonesian elementary settings points in the same direction: studies report benefits of audiovisual and multimodal media for poetry-related learning and writing, but emphasize the role of structured models and guidance (Mufidah et al., 2022; Afifah et al., 2024). Similarly, Sastrawati et al. (2025) report that project-based and digital-literacy learning can strengthen writing outcomes when supported by stepwise scaffolding and clear output expectations. These converging findings suggest that the "prompt effect" is best understood as mediated by teacher talk, routines, and explicit language supports, rather than as a technology-only intervention.

5.3 Artefact-level development: from general evaluation to sensory and figurative language

The artefact comparisons show a recognizable developmental trajectory: baseline poems relied heavily on general evaluative expressions ("*aku suka...*", "*membuatku bahagia/tenang*"), whereas final poems more often contained sensory cues, personification, metaphor, and scene coherence. This pattern is consistent with research indicating that writing quality improves when learners receive explicit instruction in craft elements and practice revising for specific targets (Graham et al., 2012). The lesson design appears to have made such craft elements "doable" by linking them to observable details in shared prompts (e.g., rain as sound and texture, flowers as color and movement), which helped students move from topic statements to image-driven lines.

However, the modest shifts in originality noted in rubric profiling underscore that richer imagery does not automatically imply novel ideas. When students work from the same shared prompt, some degree of thematic convergence is expected, and "copying" or borrowing can function as participation in a shared discourse rather than simple plagiarism (Dyson, 2010). For classroom implementation, these points lead to a productive balance: shared prompts can support equity in access to ideas, but teachers may need to add "choice points" (e.g., personal memory links, alternative perspectives, or optional sub-themes) to broaden divergence in content. Related Indonesian studies suggest comparable strategies: for example, improvements in narrative and expressive writing were supported when multimodal media were coupled with structured task variation and planning supports (Irvan et al., 2023; Mufidah et al., 2023), and when organizing tools such as mind mapping helped learners expand descriptive detail (Ichda et al., 2022). Even in poetic forms such as pantun, structured techniques combined with supportive media have been reported to strengthen students' composing performance (Aulia & Sismulyasih, 2019).

5.4 Teacher orchestration, peer talk, and self-regulation as enabling conditions

Across observations, the most generative moments occurred when prompts were accompanied by dialogic mediation—questioning, peer meaning negotiation, and incremental

feedback. This resonates with work showing that learning gains from instructional activities depend not only on materials but on how teachers and students use talk to co-construct meaning, surface interpretations, and refine ideas (Mierlo & van den Broek, 2021). In writing classrooms, such orchestration is also tied to feedback literacy: students benefit when they understand criteria, practice applying them, and receive feedback that targets one dimension at a time (Hyland, 2019).

In this study, peer interaction and iterative revision can be interpreted as episodes of self-regulated learning in which students plan, monitor, and adjust their texts, especially when supported by clear rubrics or focused revision prompts (Panadero, 2017). Technology can amplify these processes by providing shared referents (the same image/video) and by keeping attention anchored, but it can also increase extraneous load if prompts are too complex or if tasks require simultaneous attention to many dimensions (Sweller, 2011). Consequently, the observed "unevenness" across students is plausibly linked to differences in their ability to manage cognitive demands and to capitalize on feedback cycles, which reinforces the need for differentiated scaffolding and staged criteria.

5.5 Implications for teaching and research

For teaching practice, the findings support a design principle: treat multimodal prompts as shared resources for inquiry and language work, not as standalone motivation tools. Teachers can strengthen outcomes by (a) selecting prompts that are vivid yet open-ended, (b) embedding short noticing routines that elicit sensory vocabulary, (c) modeling how observations become figurative lines, and (d) sequencing revision so that students focus on one craft target at a time (diction → imagery → coherence → originality) (Graham, 2018; Graham et al., 2012). Indonesian evidence similarly suggests that multimodal and project-based designs are most effective when routines clarify what students should observe, record, and transform into text (Afifah et al., 2024; Mufidah et al., 2023; Sastrawati et al., 2025).

For research, the study's descriptive patterns invite further testing in broader contexts. Future work could compare different prompt types (static images versus video with sound), vary the degree of student choice within prompts, and examine how specific scaffolds (e.g., metaphor frames, collaborative planning templates, or feedback protocols) influence originality and revision depth. In addition, mixed-method designs could connect artefact-level change with fine-grained process evidence (e.g., revision logs, stimulated recall, or time-on-task measures) to better explain why some students benefited more than others. Such extensions would build on the present study's grounded account of classroom enactment while moving toward stronger explanatory and comparative claims.

6. Conclusion and implications

This qualitative descriptive–exploratory study documented how a STEAM-oriented language-arts design supported by LCD-projected multimodal digital prompts was enacted to scaffold Grade 5 creative poetry writing across a six-session sequence in one Indonesian elementary classroom. In response to RQ1, the study describes a replicable session structure in which STEAM was operationalized through observable routines, guided observation and inquiry, shared use of digital prompts, iterative drafting and revision, aesthetic language work, and cautious attention to patterning where explicitly taught.

Addressing RQ2, interview and observation data indicate descriptive patterns in students' composing experiences: prompts were commonly described as helpful entry points for initiating writing and for elaborating imagery, while a minority of students continued to report difficulties with

precise diction despite repeated scaffolding. For RQ3, artefact excerpts suggest a movement from general evaluative phrasing in baseline poems toward more specific sensory and figurative language in final poems, with variation across students; rubric scores are presented only as supportive descriptive profiling. These findings remain bound to the single-classroom context and should be interpreted as descriptive patterns rather than causal or comparative evidence.

For classroom practice, the six-session model can be used as a structured pathway for supporting poetry composing in late elementary grades: (a) exploration through guided noticing of shared prompts and vocabulary banking, (b) drafting with manageable constraints that translate observations into lines and images, and (c) revision through iterative peer and teacher feedback that targets one dimension at a time (e.g., diction → imagery → thematic coherence → originality). To avoid "technology-only" interpretations, prompts should be treated as resources that require orchestration through questioning, modeling, discussion, and feedback routines.

For teacher education and school programs, the model implies a need to strengthen competencies in selecting or producing age-appropriate and copyright-compliant prompts, facilitating discussion that bridges visual cues to language choices, managing multi-session drafting and revision, and using rubrics as descriptive supports (with transparent scoring logs and, where feasible, rater calibration). Digital ethics and child safety should remain explicit (anonymity, consent/assent procedures, and responsible media use), especially when classroom artefacts are analyzed for research or dissemination.

7. Limitation

Several limitations should be acknowledged. First, the study was conducted in a single Grade 5 classroom with a small number of participants; therefore, findings are context-specific and cannot be generalized statistically. Second, because a single rater completed rubric scoring, there is a risk of measurement bias despite the use of anchored descriptors and scoring logs; future studies should consider multiple raters and report inter-rater agreement or calibration procedures more systematically. Third, the descriptive before-and-after comparison is constrained by baseline equivalence: if initial tasks are not fully comparable to final tasks, interpretations of improvement should remain cautious. Fourth, the study cannot rule out alternative explanations such as teacher-orchestration effects, task-design effects, and potential novelty effects of digital media use. Future research could examine longer implementations, compare different prompt types (image-only versus audiovisual), and investigate how students with differing initial writing abilities respond to multimodal scaffolding and revision routines over time.

Credit authorship contribution statement

First Author (Iis Aprinawati): Conceptualization, Research design, Methodology, Data collection, Data analysis, Writing – original draft, Writing – review & editing.

Second Author (Nurmalina): Methodology, Classroom implementation support, Data curation, Validation.

Last Author (Hatice Ergul): Supervision, Formal analysis, Critical review, Funding acquisition.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request. Because the data include information from human participants, they are not publicly available in order to protect participant privacy and confidentiality.

Ethical Declaration

Ethical procedures included school authorization, teacher consent, and guardian consent for student participation, with student assent where appropriate. All data were anonymized, stored securely, and used only for research purposes. Digital prompts were selected from copyright-compliant sources (e.g., self-produced or openly licensed materials), and classroom use prioritized child privacy and safety. AI tools, when used, supported only language refinement and editorial coherence. No AI tool generated the study's data, analysis, or interpretation, and the authors retain full responsibility for the accuracy, originality, and integrity of the manuscript.

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Declaration of AI statement

Portions of this manuscript were drafted and edited with the assistance of ChatGPT (OpenAI) to support language refinement, coherence, and academic clarity. The AI tool was primarily used to improve grammar, academic tone, and structural consistency. All content generated with the assistance of AI was carefully reviewed, revised, and validated by the authors, who take full responsibility for the accuracy, originality, and integrity of the final manuscript.

References

- Afifah, R., Irvan, M. F., Sabila, L. Z., Andriyani, D. A., Sayekti, A., & Aurora, P. N. (2024). Development of pop-up book media with augmented reality features to support elementary students' creative writing skills. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 13(1), 31–42. <https://doi.org/10.33578/jpkip-v13i1.p31-42>
- Alvermann, D. E. (2008). Why bother theorizing adolescents' online literacies? *Journal of Adolescent & Adult Literacy*, 52(1), 8–19. <https://doi.org/10.1598/JAAL.52.1.2>
- Aulia, R., & Sismulyasih, N. (2019). Keefektifan model kepala bernomor struktur dengan media zig-zag terhadap keterampilan menulis pantun siswa kelas V SDN 19 Pekanbaru. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 8(1), 42–49. <https://doi.org/10.33578/jpkip.v8i1.7035>
- Bereiter, C., & Scardamalia, M. (1987). *The psychology of written composition*. Routledge. <https://doi.org/10.4324/9780203812310>
- Burnett, C. (2010). Technology and literacy in early childhood. *Journal of Early Childhood Literacy*, 10(3), 247–270. <https://doi.org/10.1177/1468798410372154>
- Cope, B., & Kalantzis, M. (2009). Multiliteracies. *Pedagogies*, 4(3), 164–195. <https://doi.org/10.1080/15544800903076044>
- Cremin, T., Glauert, E., Craft, A., Compton, A., & Stylianidou, F. (2015). Creative little scientists. *Literacy*, 49(3), 145–154. <https://doi.org/10.1111/lit.12047>
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE.

- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits. *Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01
- Dyson, A. H. (2010). Writing childhoods under construction. *Research in the Teaching of English*, 44(4), 338–373.
- Fleith, D. S. (2017). Teacher and student perceptions of creativity. *Thinking Skills and Creativity*, 24, 1–12. <https://doi.org/10.1016/j.tsc.2017.02.001>
- Graham, S. (2019). Changing how writing is taught. *Educational Psychologist*, 54(4), 277–294. <https://doi.org/10.1080/00461520.2018.1481407>
- Graham, S., & Hebert, M. (2011). Writing to read. *Educational Researcher*, 40(3), 710–734. <https://doi.org/10.3102/0034654311400351>
- Graham, S., & Perin, D. (2007). A meta-analysis of writing instruction. *Journal of Educational Psychology*, 99(3), 445–476. <https://doi.org/10.1037/0022-0663.99.3.445>
- Graham, S., Harris, K. R., & Chambers, A. (2016). Evidence-based writing practices. *Review of Educational Research*, 86(2), 1–40. <https://doi.org/10.3102/0034654315627286>
- Guilford, J. P. (1967). Creativity: Yesterday, today, tomorrow. *Journal of Creative Behavior*, 1(1), 3–14. <https://doi.org/10.1002/j.2162-6057.1967.tb00002.x>
- Hayes, J. R. (2012). Modeling and remodeling writing. *Written Communication*, 29(3), 369–388. <https://doi.org/10.1177/0741088312451260>
- Henriksen, D. (2017). Creating STEAM with design thinking. *TechTrends*, 61(2), 170–177. <https://doi.org/10.1007/s11528-017-0161-4>
- Henriksen, D., Mishra, P., & Fisser, P. (2016). Infusing creativity and technology. *TechTrends*, 60(3), 1–9. <https://doi.org/10.1007/s11528-016-0096-1>
- Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest. *Educational Psychologist*, 41(2), 111–127. https://doi.org/10.1207/s15326985ep4102_4
- Hyland, K. (2019). Second language writing. *Journal of Second Language Writing*, 45, 100663. <https://doi.org/10.1016/j.jslw.2019.100663>
- Ichda, S. M., Putra, Z. H., & Noviana, E. (2022). The implementation of mind mapping method toward descriptive writing ability. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 11(6), 1913–1925. <https://doi.org/10.33578/jpfkip.v11i6.9299>
- Irvan, M. F., Sutaryono, Putra, G. M. C., Munthe, N., & Subagyo, N. A. (2023). Development of augmented reality-assisted zig-zag book media in narrative writing learning in elementary school. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 12(4), 854–866. <https://doi.org/10.33578/jpfkip.v12i4.9745>
- Kaufman, J. C., & Beghetto, R. A. (2009). The four C model of creativity. *Review of General Psychology*, 13(1), 1–12. <https://doi.org/10.1037/a0013688>
- Kress, G. (2010). *Multimodality: A social semiotic approach to contemporary communication*. Routledge. <https://doi.org/10.4324/9780203970034>
- Land, M. H. (2013). Full STEAM ahead. *TechTrends*, 57(5), 547–552. <https://doi.org/10.1007/s11528-013-0685-0>
- Larkin, S. (2010). Metacognition in young writers. *Educational Psychology*, 30(3), 333–348. <https://doi.org/10.1080/01443410903553681>
- Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press. <https://doi.org/10.1017/CBO9780511811678>
- Merriam, S. B. (2015). What can you tell from an N of 1? *Qualitative Research Journal*, 15(1), 1–12. <https://doi.org/10.1108/QRJ-D-14-00003>
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE.

- Mufidah, I., Kusumaningrum, S. R., & Dewi, R. S. I. (2022). Implementation of ASI (Auditory Visual Self Improvement) model through digital visualization media for learning to read poetry in elementary schools. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 11(6), 1876–1886. <https://doi.org/10.33578/jpfkip.v11i6.9284>
- Mufidah, N., Oktari, R., Lestari, V., & Fitriani, D. (2023). The project based learning model (PjBL) assisted by scrolling picture media improves skills in writing expression. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 12(3), 642–656. <https://doi.org/10.33578/jpfkip.v12i3.9801>
- Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). SAGE.
- Peppler, K., & Wohlwend, K. (2018). Theorizing STEAM practice. *Journal of the Learning Sciences*, 27(1), 88–122. <https://doi.org/10.1080/10508406.2017.1365637>
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1–6. <https://doi.org/10.1108/10748120110424816>
- Robin, B. R. (2008). Digital storytelling. *Theory Into Practice*, 47(3), 220–228. <https://doi.org/10.1080/00405840802153916>
- Runco, M. A. (2014). Creativity: Theories and themes. *Psychology of Aesthetics, Creativity, and the Arts*, 8(4), 1–13. <https://doi.org/10.1037/a0036915>
- Sastrawati, N. E., Zulrifan, & Noviana, E. (2025). Implementation of project based learning model in digital literacy course to improve the ability to write scientific articles. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 14(1), 1–10. <https://doi.org/10.33578/jpfkip-v14i1.p1-10>
- Schindler, L. A., Burkholder, G. J., Morad, O. A., & Marsh, C. (2017). Computer-based technology and student engagement: A critical review of the literature. *International Journal of Educational Technology in Higher Education*, 14, 25. <https://doi.org/10.1186/s41239-017-0063-0>
- Sternberg, R. J. (2006). The nature of creativity. *Creativity Research Journal*, 18(1), 87–98. https://doi.org/10.1207/s15326934crj1801_10
- Sweller, J. (2005). Implications of cognitive load theory. *Educational Psychology Review*, 17(2), 1–15. <https://doi.org/10.1007/s10648-005-3951-0>
- Torrance, E. P. (1974). Torrance tests of creative thinking. *Journal of Creative Behavior*, 8(3), 163–167. <https://doi.org/10.1002/j.2162-6057.1974.tb01178.x>
- Warschauer, M. (2008). L2 literacy and technology. *Computers & Education*, 50(2), 625–643. <https://doi.org/10.1016/j.compedu.2008.03.002>
- Wilson, A. (2013). Creativity in primary education. *Thinking Skills and Creativity*, 8, 1–9. <https://doi.org/10.1016/j.tsc.2012.07.001>
- Yakman, G., & Lee, H. (2012). Exploring the STEAM framework. *Journal of STEM Education*, 13(1), 1–12.
- Zimmerman, B. J. (2002). Becoming a self-regulated writer. *Theory Into Practice*, 41(2), 73–81. https://doi.org/10.1207/s15430421tip4102_2
- Zimmerman, B. J., & Bandura, A. (1994). Self-regulation of writing. *Educational Psychologist*, 29(3), 845–862. https://doi.org/10.1207/s15326985ep2903_3
- Zimmerman, B. J., & Kitsantas, A. (2007). A writer's discipline. *American Educational Research Journal*, 44(2), 1–23. <https://doi.org/10.3102/0002831207300199>