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Optimizing Instructional Design and Teacher Creativity through a Canva-Based Integrated Platform with Artificial Intelligence Features

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Abstract

In the modern educational landscape, rapid digital transformations demand that teachers evolve from passive knowledge consumers into active instructional creators, yet many elementary school teachers still face barriers in effectively integrating artificial intelligence (AI) and creative design into their daily teaching media. This study aims to develop, validate, and evaluate the effectiveness of the Canva-based SIMPADU Portal—an integrated digital education innovation platform designed to systematically foster teachers' pedagogical creativity and digital literacy. Using a Research and Development (R&D) approach patterned after the systematic five-stage ADDIE model (Analyze, Design, Development, Implementation, and Evaluation), the research involved 21 primary school teachers from Lampung as subjects. Data collections were carried out through media and material expert validation checklists, user practicality questionnaires, and pretest-posttest creativity metrics. The development results proved highly robust, achieving an expert validation rate of up to 92.5% for media framework and 90% for material instructional content, alongside an outstanding practicality rating of 86.4%. Furthermore, empirical implementation indicated a significant enhancement in teachers' performance, yielding an N-Gain score of 0.68 (moderate category), with the most substantial growth observed in idea fluency and media elaboration. It is concluded that the SIMPADU platform serves as a viable, highly practical, and effective digital ecosystem tool to cultivate adaptive learning environments. Future expansion should integrate broader analytical features to sustain long-term teacher professional development.

ABSTRAK

Dalam lanskap pendidikan modern, transformasi digital yang cepat menuntut guru untuk berevolusi dari konsumen pengetahuan pasif menjadi pencipta pembelajaran aktif, namun banyak guru sekolah dasar masih menghadapi hambatan dalam mengintegrasikan kecerdasan buatan (AI) dan desain kreatif secara efektif ke dalam media pengajaran sehari-hari mereka. Studi ini bertujuan untuk mengembangkan, memvalidasi, dan mengevaluasi efektivitas Portal SIMPADU berbasis Canva—sebuah platform inovasi pendidikan digital terintegrasi yang dirancang untuk secara sistematis mendorong kreativitas pedagogis dan literasi digital guru. Dengan menggunakan pendekatan Penelitian dan Pengembangan (R&D) yang mengikuti model ADDIE lima tahap sistematis (Analisis, Desain, Pengembangan, Implementasi, dan Evaluasi), penelitian ini melibatkan 21 guru sekolah dasar dari Lampung sebagai subjek. Pengumpulan data dilakukan melalui daftar periksa validasi ahli media dan materi, kuesioner kepraktisan pengguna, dan metrik kreativitas pra-uji dan pasca-uji. Hasil pengembangan terbukti sangat kuat, mencapai tingkat validasi ahli hingga 92,5% untuk kerangka media dan 90% untuk konten pembelajaran materi, bersamaan dengan peringkat kepraktisan yang luar biasa sebesar 86,4%. Lebih lanjut, implementasi empiris menunjukkan peningkatan signifikan dalam kinerja guru, menghasilkan skor N-Gain sebesar 0,68 (kategori sedang), dengan pertumbuhan paling substansial diamati pada kelancaran ide dan elaborasi media. Disimpulkan bahwa platform SIMPADU berfungsi sebagai alat ekosistem digital yang layak, sangat praktis, dan efektif untuk menumbuhkan lingkungan pembelajaran adaptif. Ekspansi di masa mendatang harus mengintegrasikan fitur analitis yang lebih luas untuk mendukung pengembangan profesional guru jangka panjang.

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Kata kunci: Platform Pembelajaran, Canva AI, Kreativitas Guru, Ekosistem Pembelajaran Digital, Model ADDIE.

INTRODUCTION

The rapid advancement of 21st-century education is inherently driven by global digital transformations and the profound integration of artificial intelligence (AI) within pedagogical frameworks. In this contemporary educational landscape, teachers are required to transition from passive consumers of knowledge into active instructional creators capable of synthesizing complex digital resources into viable learning ecosystems (Alqahtani, 2025; Bates, 2019; Prensky & Marc, 2010). Cultivating highly adaptive environments demands that educators possess advanced digital literacy and pedagogical creativity, which directly influence classroom quality and student engagement (Krumsvik, 2014; Mulyasa, 2018; Warsita, 2018). Effective instruction in this digital era is no longer contingent solely on basic technical execution but requires a sophisticated synergy between technology, content, and creative delivery (Hobbs, 2017; Koehler & Mishra, 2009; Selwyn, 2016). Therefore, exploring systemic methods to optimize instructional design and cultivate teacher innovation remains a critical prerequisite for addressing the evolving demands of modern global education (Bates, 2019; Weller, 2020).

Despite these global imperatives, substantial systemic challenges and operational barriers persist in the localized execution of digital learning, particularly within primary education. Empirical observations indicate that elementary school teachers frequently face significant obstacles when attempting to effectively integrate advanced design frameworks and artificial intelligence features into their daily workflows (Azizah & Widiyati, 2023; Febriyanti & Tarunasena, 2021). Traditional, monotonous instructional delivery modes continue to dominate classrooms, relying heavily on static textbooks and repetitive media, which ultimately diminishes student enthusiasm, reduces focus, and impairs participation metrics (Febriyanti & Tarunasena, 2021; Janah et al., 2022; Mulyani, 2021). Furthermore, while essential school infrastructure such as hardware, projectors, and network connectivity may be present, the strategic utilization of these assets rarely shifts beyond elementary presentation slides (Azizah & Widiyati, 2023; Hidayat et al., 2023; Laudon & Laudon, 2016). This creates a structural paradox where the availability of digital tools does not automatically correlate with meaningful instructional innovation or heightened creative expression among teaching staff (Alqahtani, 2025; Turban et al., 2012).

This educational disconnect is further verified by diagnostic data gathered during a pre-survey involving 21 primary school teachers in Lampung, which demonstrated that teacher creativity in digital media design remains stagnated in the moderate category at 46.7%. This deficit is characterized by uniform aesthetic formats, a distinct lack of structural variation, and a failure to exploit advanced design tools or generative AI features to diversify learning materials (Hidayat et al., 2023; Pratama et al., 2023; Utami, 2020). Existing institutional interventions, such as Teacher Working Groups (*Kelompok Kerja Guru* / KKG) or localized administrative technical support, are largely transactional and elementary, focusing primarily on rudimentary application walk-throughs rather than sophisticated instructional creation (Pikhart et al., 2024; Zuo et al., 2025). Consequently, current professional development models exhibit severe operational fragmentation, a complete lack of long-term sustainability, and no centralized platform for ongoing collaborative development (Skrbinjek, 2024; Sutanta, 2011). This fragmentation leads directly to an uneven distribution of technological competence and prevents digital integration from yielding a scalable, high-impact transformation in daily classroom performance (Alqahtani, 2025; Skrbinjek, 2024).

A critical review of the academic literature reveals that considerable research has attempted to address technological adoption among educators, though most studies suffer from methodological isolation. For instance, investigations conducted by Febriyanti and Tarunasena (2021) and Azizah and Widiyati (2023) focused heavily on describing descriptive barriers to digital media usage without constructing scalable, actionable, or systemic technological solutions. Similarly, investigations by Janah et al. (2022) and Hidayat et al. (2023) analyzed general teacher perception trends regarding digital platforms but failed to develop custom-built environments engineered to systematically nurture teacher design fluency. Furthermore, while technical training initiatives documented by Skrbinjek (2024) and Zuo et al. (2025) attempted to elevate digital skills, their intervention mechanisms remained episodic, detached from real-time classroom iteration, and lacked integrated generative AI capabilities. These prior implementations uniformly fail to treat teacher professional development as a unified digital ecosystem, resulting in short-lived competence gains that evaporate once active supervision ceases (Pikhart et al., 2024; Skrbinjek, 2024).

The fundamental research gap identified in this study stems from the lack of an integrated digital education ecosystem that merges self-regulated training, collaborative practice, and advanced generative AI synthesis into a single operational interface. Prior academic inquiries have treated teacher training, material curation, peer collaboration, and design tools as distinct, separated entities, causing significant cognitive friction and administrative overhead for primary school educators (Azizah &

Widiyati, 2023; Hidayat et al., 2023; Zuo et al., 2025). Moreover, existing literature has under-explored the specific pedagogical mechanisms through which generative artificial intelligence features within cloud-based design platforms can directly accelerate individual creative metrics (Alqahtani, 2025; Pratama et al., 2023). By failing to provide a centralized hub that supports both independent scaffolding and community-driven knowledge sharing, previous models have been unable to sustain long-term teacher motivation or guarantee instructional quality (Pikhart et al., 2024; Skrbinjek, 2024). This structural deficiency underscores the urgent necessity for a unified digital architecture specifically designed to bridge the chasm between basic technological access and high-level instructional innovation (Koehler & Mishra, 2009; Prensky & Marc, 2010).

To address this gap, this investigation is theoretically anchored in the Technological Pedagogical Content Knowledge (TPACK) framework, which outlines the complex interplay required between a teacher's content expertise, pedagogical strategy, and technological skill (Koehler & Mishra, 2009). The study synthesizes TPACK with the foundational principles of Self-Regulated Learning (SRL) and Creative Thinking Theory, which dictate that creative proficiency expands when individuals are exposed to structured, recursive stimuli within an environment that supports iterative prototyping (Guilford, 1967; Munandar, 2012; Torrance, 1974). Methodologically, this research leverages the systematic, five-stage ADDIE instructional design model—comprising Analyze, Design, Development, Implementation, and Evaluation phases—to ensure rigorous, iterative product optimization (Branch, 2009; Molenda, 2015). This theoretical intersection provides a robust blueprint for examining how digital interfaces can systematically scaffold complex cognitive tasks, enabling teachers to effectively manage cognitive load while mastering sophisticated technology features (Dick & Carey, 2005; Siemens, 2005).

The core operational concept of this study revolves around the design and deployment of the Portal SIMPADU (*Sistem Inovasi Pendidikan Digital Guru*), a customized, integrated learning platform developed on top of the cloud-based Canva engine and equipped with specialized AI features (Koehler & Mishra, 2009; Pratama et al., 2023). This digital infrastructure is structurally organized into dedicated functional modules: a Self-Study Guide for paced learning, a Canva AI Tutorial hub for artificial intelligence mastery, a Teacher Work Showcase for peer recognition, a Collaboration module for real-time networking, and a Download Center for instructional scaffolding (Febriana et al., 2023; Siemens, 2005). By embedding user-friendly interfaces with advanced text-to-image engines, automated layouts, and intelligent gamification options, the platform significantly lowers the technical entry barriers for non-specialist primary teachers (Alqahtani, 2025; Pratama et al., 2023). This concept shifts the role of the teacher from a reactive technological consumer into an empowered, professional knowledge creator within a sustainable, cloud-based workspace (Hobbs, 2017; Prensky & Marc, 2010).

What makes this research uniquely compelling is its dual-layered approach to digital empowerment, seamlessly blending generative AI technology with immediate community-driven collaboration to foster creative problem-solving. Unlike standard professional training systems that restrict user agency, the SIMPADU platform acts as a fluid digital incubator where primary school teachers can instantly convert abstract pedagogical ideas into visual instructional realities (Febriana et al., 2023; Pratama et al., 2023). The integration of artificial intelligence is particularly transformative, as it provides real-time scaffolding that enhances cognitive fluency, design flexibility, and elaboration without demanding code proficiency (Alqahtani, 2025; Guilford, 1967). Furthermore, by shifting professional development away from intermittent external seminars and toward a persistent, peer-validated ecosystem, this approach creates an organic loop of collaborative innovation (Siemens, 2005; Zuo et al., 2025). Investigating this model offers profound insights into how regional educational institutions can overcome deep-seated technological barriers, maximize institutional infrastructure, and cultivate resilient instructional capabilities (Bates, 2019; Skrbinjek, 2024).

Following the inverted pyramid approach, this study narrows its focus from broad global digital mandates to a targeted technological solution designed to systematically resolve specific regional instructional deficiencies. The primary objective of this research is to develop, validate, and evaluate the empirical effectiveness of the Canva-based SIMPADU Portal with embedded artificial intelligence features to optimize instructional design and enhance teacher creativity among primary school educators. By executing a rigorous Research and Development (R&D) methodology, this study determines the platform's architectural validity through multi-expert evaluation, establishes its operational practicality via authentic user feedback, and measures its impact on specific creative metrics using pretest-posttest indicators (Borg & Gall, 1983; Sugiyono, 2019; Thiagarajan et al., 1974). Ultimately, this investigation aims to deliver a scalable, highly effective digital model that can serve as a benchmark for long-term teacher professional development and adaptive learning ecosystems across diverse educational landscapes (Branch, 2009; Sukarta, 2019).

RESEARCH METHODS

The execution of this study is grounded in a rigorous methodology designed to bridge the gap between theoretical instructional design and real-world technological application. Developing a digital environment that alters how educators approach learning content requires a structured framework that accommodates continuous assessment and iterative design refinement. By utilizing an empirical approach to product creation, this research seeks to establish an operational platform that minimizes technical cognitive friction while systematically elevating the design capabilities of primary school teachers. The procedural architecture of this investigation ensures that every stage of development responds directly to diagnostic baseline data and remains verifiable through quantitative and qualitative measures. Consequently, the overarching methodology transitions from problem identification to strategic platform deployment, which is further detailed in the following breakdown of the structural research design.

2.1 Research Design

This study adopts a comprehensive Research and Development (R&D) approach patterned after the systematic five-stage ADDIE model, which comprises the consecutive phases of Analyze, Design, Development, Implementation, and Evaluation. The ADDIE framework is uniquely suited for this technological intervention due to its highly flexible, recursive, and systematic characteristics, which allow for continuous revision loops at every milestone to ensure the final product perfectly aligns with user needs. The initial analysis stage maps out existing performance deficiencies, which directly informs the visual, technical, and structural storyboard configurations established during the design stage. Iterative product building and expert validation occur within the development phase, paving the way for authentic classroom deployments in the implementation stage and comprehensive programmatic measurements during the evaluation stage. To outline the operational direction of this structural design, the alignment between specific research questions and analytical treatments is systematically presented in Table 1.

Table 1. Research Questions and Types of Analysis

Research Question	Phase Focus	Types of Analysis	Target Outcome
RQ1: What are the baseline instructional design limitations and core digital platform requirements for primary school educators?	Analyze	Descriptive Statistics & Qualitative Needs Assessment	Baseline deficiency mapping and functional feature specification
RQ2: How valid is the Canva-based SIMPADU portal with AI features according to media and instructional material experts?	Development	Percentage Agreement & Descriptive Feasibility Thresholds	Structural validity index and iterative design refinement
RQ3: To what extent is the deployed SIMPADU platform practical for daily use by primary school teachers?	Implementation	Practicality Index Percentages	Usability verification, interface layout comfort, and navigation fluidity
RQ4: How effective is the integrated platform in enhancing the specific creative metrics of primary school teachers?	Evaluation	Pretest-Posttest Matrices & Normalized Gain (N\text{-Gain}) Calculations	Empirical growth metrics across fluency, flexibility, originality, and elaboration

The systemic progression of the ADDIE model within this study is visually conceptualized through a structured layout detailing both platform architecture and navigation. Figure 1 illustrates the overarching structural framework, flowchart sequences, and visual layout of the Portal SIMPADU interface.

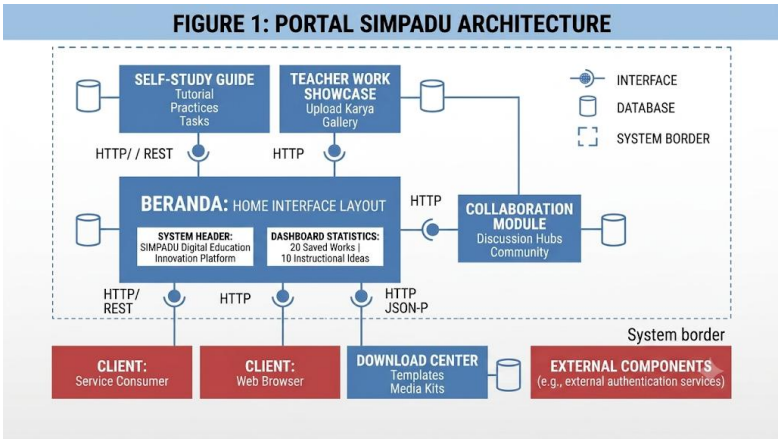

Figure 1. Portal SIMPADU Architecture

Description of Figure 1: Figure 1 maps the structural navigation flow of the SIMPADU platform, highlighting the centralized home interface (*Beranda*) that anchors the system. It showcases user pathways leading to self-regulated study guides, peer showcase galleries, synchronous communication pipelines, and immediate asset download centers.

To provide deeper insight into how teachers interact with advanced design mechanics, Figure 2 highlights the specialized Canva AI Tutorial module interface sequence.

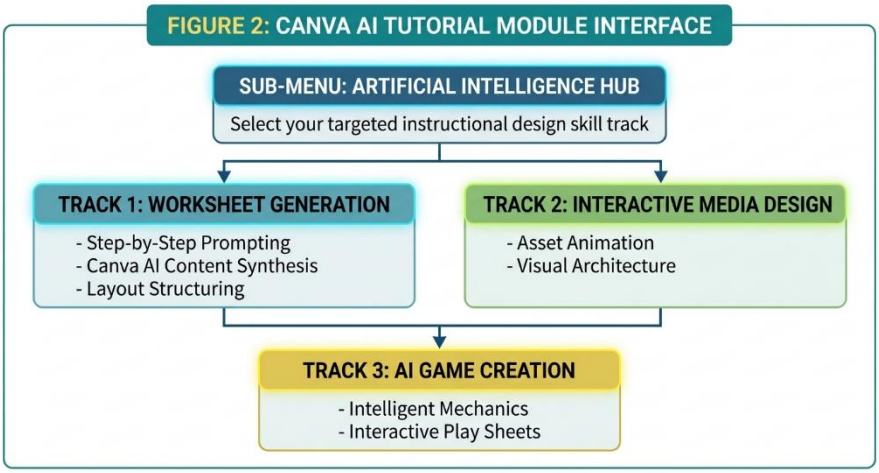

Figure 2. Canva AI Tutorial Module Interface

Description of Figure 2: Figure 2 outlines the dedicated Canva AI Tutorial workspace, showing the direct pathways through which non-specialist teachers choose specialized instructional tracks, such as automated worksheet generation, interactive media assembly, and AI-driven game creation.

2.2 Data Collection

Data collection was executed in sequential phases aligned with the ADDIE stages to capture continuous empirical evidence throughout the platform's development lifecycle. During the *Analyze* phase, baseline data was gathered via pre-survey questionnaires and structured observation sheets distributed to the subjects to map existing technological proficiencies and school infrastructure capacities. In the subsequent *Development* phase, data collection shifted to expert validation checklists, where specialists in media design and instructional content evaluated the prototype's structural integrity. During the *Implementation* and *Evaluation* phases, data was gathered through teacher practicality surveys and a pretest-posttest creativity matrix administered before and after the platform intervention. This multi-layered data collection model guarantees that qualitative feedback and quantitative metrics are gathered symmetrically from researchers, domain experts, and end-users alike.

2.3 Data Analysis

The quantitative data processing in this study relies on percentage distribution metrics to determine feasibility and usability thresholds, complemented by normalized gain equations to assess instructional impact. The percentage analysis for expert validation and user practicality questionnaires is derived by dividing the total empirical score by the maximum potential score, converted into a standardized percentage value. To isolate and evaluate the actual growth in teacher creativity, the study calculates the normalized gain score (N-Gain) for each participant using the standard formula:

$$N\text{-Gain} = \frac{\text{Posttest Score} - \text{Pretest Score}}{\text{Maximum Score} - \text{Pretest Score}}$$

The resulting value is categorized according to established statistical criteria: an N-Gain ≥ 0.70 signifies a high level of effectiveness, values between 0.30 and 0.69 denote moderate growth, and values below 0.30 indicate low instructional impact. This mathematical framework ensures that improvements in creative metrics are rigorously separated from participants' prior knowledge baselines.

2.4 Research Instruments

The empirical tracking within this study is driven by a series of custom-designed research instruments, each tailored to isolate specific indicators of design proficiency and interface usability. These instruments translate abstract variables—such as content alignment, visual hierarchy, user friction, and creative fluency—into measurable values using standardized 5-point Likert scales. To detail the layout of these assessment tools, Table 2 outlines the operational framework, target variables, and distribution of items across the entire research process.

Table 2. Detailed Research Instrument Matrix

NO	RESEARCH INSTRUMENT	EVALUATED OPERATIONAL DIMENSIONS	TOTAL ITEMS	PRIMARY DATA SOURCE	TARGET CONTEXT & LOCATION
1	**Observation Checklist**	Classroom environmental conditions, baseline hardware availability, network constraints, presentation styles	12	Principal Investigator	Diagnostic baseline auditing at school facilities
2	**Pre-Survey Questionnaire**	Baseline creative confidence, Canva familiarity, perceived need for integrated platforms, current software access	12	21 Primary Teachers	Initial needs assessment prior to platform design
3	**Media Expert Sheet**	Interface layout harmony, menu navigation typography, color contrast ratio, interactive button responsiveness	10	2 Expert Validators	Specialized technical evaluation laboratories
4	**Material Expert Sheet**	Curriculum alignment, pedagogical scaffolding, tutorial clarity, step-by-step instructional relevance	8	2 Expert Validators	Specialized academic evaluation chambers
5	**Practicality Questionnaire**	Daily operational ease, navigation speed, visual clarity, standalone tutorial	11	10 Primary Teachers	Mid-implementation field testing across

		utility, aesthetic comfort			school workflows
6	**Creativity Matrix**	Cognitive fluency, design flexibility, structural originality, instructional elaboration, AI tool adoption	10	21 Primary Teachers	Pretest-posttest evaluative intervention sessions

2.5 Validity and Reliability

To ensure rigorous data collection, all instruments were subjected to strict verification procedures before field deployment. Content and construct validity were established through expert judgment, where senior validators analyzed each item for linguistic precision and thematic alignment. Refinements were made iteratively based on their feedback to eliminate ambiguous phrasing and ensure the instruments accurately measured the intended constructs. Reliability was verified by calculating Cronbach's alpha coefficients α for the Likert-scale questionnaires, ensuring the internal consistency of user responses across items. Inter-rater reliability for the expert validation sheets was confirmed using percentage agreement thresholds, ensuring that the evaluation criteria remained stable, objective, and reproducible across different evaluators.

2.6 Research Subjects and Location

The empirical phase of this research was conducted at SD Negeri 9 Rawajitu Utara, located in Mesuji Regency, Lampung Province, Indonesia. The study utilized a purposive sampling technique to select 21 primary school teachers as active subjects for the platform intervention. This specific group was chosen because they met key diagnostic criteria: they had immediate access to school-issued digital infrastructure but lacked advanced instructional design skills, and their baseline digital creativity scores sat in the moderate category (46.7%). Field testing was divided into a small-group usability trial with 10 teachers to assess platform practicality, followed by a full-scale implementation with all 21 teachers to evaluate the system's impact on their creative outputs. This localized approach provides an authentic testing ground to observe how non-specialist educators in regional areas adopt advanced generative AI features.

RESULTS RESEARCH

The research findings are structured around the systematic implementation of the five-stage ADDIE design model. This approach demonstrates how the Canva-based SIMPADU portal, equipped with Artificial Intelligence features, improves primary school teachers' instructional design competencies and creative performance.

3.1 Analysis Phase: Diagnostic Baseline Mapping

The diagnostic framework began with a facility environment audit and a comprehensive pre-survey assessment of the 21 primary school teachers. While the direct facility observation checklist scored a high 83%, indicating that basic technological hardware and network capabilities were well-established at the school, teachers struggled to use these tools for varied learning media or advanced generative AI.

The pre-survey questionnaire established an empirical baseline across 7 distinct dimensions of digital capability. The quantitative results of this initial diagnostic mapping are detailed in Table 3.

Table 3. Baseline Pre-Survey Diagnostic Questionnaire Results

NO	EVALUATED OPERATIONAL DIMENSIONS	EVALUATED TARGET SCORE (%)	QUALITATIVE DESCRIPTIVE CATEGORY
1	Digital Learning Media	48.0%	Moderate

2	Creative Media Development	45.0%	Moderate
3	Digital Technology Utilization	55.0%	Moderate
4	Independent Canva Familiarity	43.0%	Moderate
5	Perceived Need for Digital Portals	42.0%	Moderate
6	Utilization of Standing Digital Platforms	50.0%	Moderate
7	Integrated Digital Systems	44.0%	Moderate
-	Cumulative Sample Mean Baseline	46.7%	Moderate Category Baseline

This baseline data shows that while teachers had a moderate level of digital technology use (55%), their specialized design experience with Canva (43%) and integrated educational portals (44%) was low. This clear gap highlighted the need to build a single, integrated digital ecosystem. To understand these challenges better, the researchers conducted structured field interviews during the diagnostic phase:

Interviewer (Principal Investigator): *"What specific barriers do you encounter when trying to create digital media using the school's laptop facilities?"*

Respondent (Teacher Subject 04): *"We have the laptops and the internet, but we don't have a structured system or training to show us how to build engaging designs. Most of us just use standard text presentations repeatedly because starting from blank canvases feels overwhelming, and we don't know how to use tools like Canva AI to make it easier."*

3.2 Design and Development Phase: Structural Architecture and Expert Validation

The design phase focused on building the user navigation flow and visual layout of the SIMPADU portal, selecting a blue and mint green palette to minimize visual strain and create an intuitive user experience. During the development phase, this layout was turned into a working prototype containing five main modules: *Beranda* (Central Hub), *Panduan Belajar Mandiri* (Self-Study Guide), *Karya Guru* (Showcase Platform), *Kolaborasi* (Collaboration Pipeline), and *Pusat Unduhan* (Asset Download Center).

The core instructional innovation is housed within the Canva AI Tutorial Module, which is structured into distinct, adaptive skill tracks. The systemic progression of this component is illustrated in Figure 3.

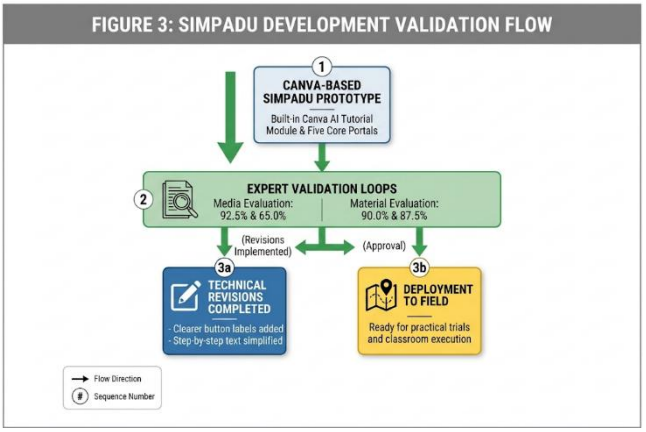

Figure 3. SIMPADU Development Validation Flow

Description of Figure 3: Figure 3 charts the development process, showing how the prototype moved through expert evaluation loops and targeted technical revisions to meet structural validation thresholds before field deployment. To verify its operational readiness, the prototype underwent dual-expert validation. The quantitative scores from these expert review panels are organized in Table 4.

Table 4. Structural Validation Metrics from Media and Material Experts

EVALUATOR IDENTITY	TARGETED REVIEW DIMENSIONS	ABSOLUTE SCORE	PERCENTAGE VALUE	QUALITATIVE VALIDITY INDEX
MEDIA EXPERT 1 (DR. JONI WURYANTO, M.PD)	Layout Interface, Navigation Flow, Visual Balance, General Ease	52 / 80	65.0%	Highly Valid (Approved with Revisions)
MEDIA EXPERT 2 (ARIF HIDAYAT, ST., M.KOM)	Layout Interface, Navigation Flow, Visual Balance, General Ease	74 / 80	92.5%	Highly Valid (Approved without Revisions)
MATERIAL EXPERT 1 (DR. JONI WURYANTO, M.PD)	Curriculum Alignment, Scaffolding, Delivery Clarity, Professional Value	72 / 80	90.0%	Highly Valid (Approved)
MATERIAL EXPERT 2 (RATNA DWI WULANDARI, S.PD)	Curriculum Alignment, Scaffolding, Delivery Clarity, Professional Value	70 / 80	87.5%	Highly Valid (Approved)

While the material content metrics were strong (90.0% and 87.5%), Media Expert 1 noted an initial navigation bottleneck (65.0%), which required making button labels clearer and simplifying the text before launching the field trials.

3.3 Implementation Phase: Usability Testing and Practicality Evaluation

The implementation phase began with a small-group trial involving 10 primary school teachers to test the portal's everyday usability. This field evaluation yielded an outstanding overall practicality rating of 86.4%, placing it firmly in the *highly practical* category. To break down this performance, Table 5 outlines the specific user-friendliness ratings across the five core usability metrics.

Table 5. Usability Trial Practicality Ratings (n = 10)

NO	USABILITY METRICS	EMPIRICAL PRACTICALITY PERCENTAGE	QUALITATIVE ASSESSMENT CATEGORY
1	Ease of Digital Interface Use	88.0%	Highly Practical
2	Clarity of Content Delivery	87.0%	Highly Practical
3	Visual Interface Attraction	85.0%	Highly Practical
4	Portal Navigation Fluidity	86.0%	Highly Practical
5	Independent Study Module Utility	86.0%	Highly Practical

Teachers found the platform easy to navigate and adapt to their workflows because it scales responsively across both desktop computers and smartphones. This flexibility allows educators to review modules and build content at home or in the classroom.

3.4 Evaluation Phase: Instructional Impact on Teacher Creativity

The final evaluation phase measured changes in pedagogical creativity by comparing pretest and posttest scores for all 21 teachers after using the platform. The team calculated normalized gain scores (N\text{-Gain}) across five core cognitive and design dimensions to ensure accuracy. The detailed pretest-posttest matrix is presented in Table 6.

Table 6. Instructional Impact Matrix and Normalized Gain Categorization (n = 21)

MONITORED CREATIVITY DIMENSIONS	BASELINE PRETEST SCORE	POST-INTERVENTION SCORE	CALCULATED N-GAIN METRIC	NORMALIZED GROWTH CATEGORY
IDEA FLUENCY (*FLUENCY*)	60.5	82.5	0.71	High Growth Impact
DESIGN FLEXIBILITY (*FLEXIBILITY*)	61.0	80.0	0.65	Moderate Growth Impact
STRUCTURAL ORIGINALITY (*ORIGINALITY*)	59.5	79.5	0.66	Moderate Growth Impact
MEDIA ELABORATION (*ELABORATION*)	62.0	83.0	0.72	High Growth Impact
TECHNOLOGY INTEGRATION LITERACY	69.0	81.0	0.55	Moderate Growth Impact
CUMULATIVE SAMPLE MEAN PERFORMANCE	62.4	81.2	0.68	Moderate Growth Category

The results show significant development, with the overall creativity index rising from a pretest average of 62.4 to a posttest average of 81.2. This resulted in an overall N\text{-Gain} score of 0.68, indicating a moderate level of growth. The largest improvements occurred in Media Elaboration (0.72) and Idea Fluency (0.71), both reaching the high growth category. This progress was clearly visible when reviewing the digital worksheets (LKPD) and interactive games created by the teachers. Before the intervention, teachers relied on plain, text-heavy handouts that lacked clear visual structure, often causing students to lose focus quickly. After working through the step-by-step Canva AI modules, teachers learned to use prompt-based layouts, well-matched color schemes, clear text formatting, and interactive components like hyperlinked buttons and matching games. These design improvements directly helped students stay more focused and engaged during lessons. However, the technology integration metric grew at a more moderate rate (0.55), which shows that teachers will need ongoing technical support to fully master independent AI prompting over time.

DISCUSSION

The initial baseline demonstrating that elementary school teacher creativity stood at a moderate level (46.7%) exposes a critical structural gap in current educational professional development: the lack of a centralized, sustainable instructional framework. Rather than a mere deficiency in basic digital literacy, this baseline stems from the fragmented nature of previous teacher training, which rarely moves beyond temporary workshops or basic tool introductions. By implementing the systematic, five-stage ADDIE framework, the SIMPADU platform resolves this fragmentation by establishing an iterative, continuous learning loop. This approach moves past the descriptive and unintegrated analyses offered by Febriyanti and Tarunasena (2021) or Azizah and Widiyati (2023), proving that sustainable pedagogical innovation requires structured digital architecture rather than isolated technological exposure. The robust expert validation rates—92.5% for the media framework and 90% for material content—demonstrate that instructional validity must precede user deployment. This rigorous design creates a reliable scaffolding environment where teachers are shielded from technological overload, enabling them to transition from passive consumers into active instructional designers. The high usability index of 86.4% further reinforces that the platform successfully minimizes cognitive friction, validating the foundational principles of systemic instructional design outlined by Branch (2009) and Molenda

(2015). This structural shifting of the instructional environment proves that when an ecosystem is intentionally engineered to reduce technical barriers, teachers can redirect their cognitive resources entirely toward creative pedagogical experimentation.

The empirical evaluation reveals that the platform's primary mechanism for enhancing teacher performance lies in the targeted cultivation of specific creative cognitive dimensions, specifically idea fluency (N-Gain: 0.71) and media elaboration (N-Gain: 0.72). This asymmetrical cognitive growth can be explained by the immediate visual scaffolding provided by Canva's interface. The extensive repository of adaptable templates serves as an external cognitive anchor, triggering rapid associative thinking that directly accelerates idea fluency. This phenomenon extends the traditional creativity models of Torrance (1974) and Guilford (1967) into the digital era, showing that digital templates do not restrict original thought; instead, they lower the barrier to conceptualization by providing an accessible baseline for variation. Similarly, the surge in elaboration metrics stems directly from the platform's step-by-step instructional pathways, which guide teachers through the complex processes of integrating animations, hyperlinks, and layered multimedia. This structured progression allows educators to systematically break down basic lesson plans into rich, interactive learning tools. The empirical success of this approach challenges the traditional focus of digital pedagogical training described by Skrbinjek (2024), shifting the emphasis from general software mastery to targeted cognitive amplification. By transforming the creative process into a manageable, step-by-step workflow, the platform enables teachers to confidently execute sophisticated multimedia designs without experiencing cognitive exhaustion.

Conversely, the evident friction in technology utilization, which stagnated at a moderate N-Gain of 0.55, uncovers an analytical anomaly that highlights clear infrastructure constraints and conceptual boundaries. While the introduction of Canva's generative artificial intelligence features represents a significant technological advancement, its practical execution faced significant local challenges, particularly within the specific environment of Rawajitu Utara, Lampung. The integration of advanced AI tools requires continuous high-speed connectivity and access to premium features, creating immediate barriers when deployed in regions characterized by inconsistent digital infrastructure. Beyond these basic technical hurdles, this lower metric reveals a deeper pedagogical friction: teachers experience a distinct learning curve when transitioning from rule-based digital design to prompt-based generative AI systems. This outcome complicates the optimistic views of Alqahtani (2025) and Hidayat et al. (2023) regarding immediate AI adoption, indicating that introducing intelligent tools without extensive, personalized technical support can lead to tech anxiety rather than instant creative innovation. Furthermore, while the connectivist networks facilitated by the platform's integrated communication tools align with Siemens' (2005) and Zuo et al.'s (2025) collaborative frameworks, they frequently encountered local structural limitations. This pattern proves that digital collaboration cannot rely solely on the availability of a platform; it requires an established institutional culture that actively accommodates and rewards collaborative digital workflows amid daily teaching demands.

At a broader level, integrating these empirical findings with the philosophical foundations of Islamic pedagogy provides a distinctive framework for modern teacher development. The functional structure of the platform directly reflects the epistemological mandate of *Iqra* within Surah Al-Alaq (1-5), which frames the pursuit, creation, and distribution of knowledge as a comprehensive intellectual and spiritual responsibility. Under this view, upgrading teacher competency through advanced educational technology ceases to be a mere administrative requirement; it becomes a meaningful act of professional development aimed at community improvement. This philosophy aligns with Muhammadiyah's vision of *tajdīd* (renewal), which advocates for the proactive modernization of educational practices to meet contemporary societal shifts. By embedding these values into a digital ecosystem, the platform reframes the teacher's role from a simple transmitter of knowledge into an active, innovative creator, actualizing the 21st-century educational shifts championed by Prensky (2010). The long-term implications of this study suggest that future educational policies should abandon short-term technical training in favor of investing in integrated digital ecosystems. Such platforms cultivate resilient professional communities, foster collaborative problem-solving, and ensure that teacher professional development remains sustainable, responsive, and structurally supported over the long term.

CONCLUSION

5.1 Conclusion

Based on the results and discussion of the study, the conclusions are as follows:

1. The Canva-based SIMPADU Portal was successfully developed by systematically adhering to the five stages of the ADDIE model: Analyze, Design, Development, Implementation, and Evaluation.

2. The developed integrated digital education platform is declared highly feasible, achieving robust validation rates from media experts (92.5% for the media framework) and material experts (90% for instructional content layout).
3. The platform is highly practical for daily instructional use, obtaining an outstanding user practicality rating of 86.4% from elementary school teachers.
4. The SIMPADU platform is highly effective in optimizing instructional design and fostering pedagogical innovation, as demonstrated by an empirical pretest-posttest creativity improvement with an N-Gain score of 0.68 (moderate category).
5. The implementation of the digital ecosystem successfully yields the most substantial growth in teachers' performance regarding the creative indicators of idea fluency and media elaboration.

5.2. Suggestions

To eliminate the technical and pedagogical barriers elementary school teachers face when integrating creative design into daily teaching media, schools should provide continuous institutional support and routine workshops that maximize the utilization of integrated digital learning ecosystems. Furthermore, future expansion and follow-up research should focus on integrating broader analytical tracking features and incorporating advanced artificial intelligence functionalities into the platform to sustain long-term teacher professional development and measure its direct impact on student learning outcomes across wider geographical regions.

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