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The Teacher Professional Development and AI-Supported Instructional Administration in Pekanbaru: A Documentary Study

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Abstrak

Artikel ini mendokumentasikan kegiatan pengembangan profesional guru dan pemanfaatan Gemini AI dalam penyusunan administrasi pembelajaran di Pekanbaru, Indonesia. Portofolio kegiatan mencatat 68 guru yang terkait dengan kegiatan di SMKS Darul Hikmah, SD Negeri 47 Pekanbaru, dan SMP Negeri 11 Pekanbaru. Bukti dokumenter menunjukkan bahwa fokus kegiatan pada ketiga sekolah berbeda sehingga tidak seluruhnya dikategorikan sebagai satu pelatihan Gemini AI yang sama. Data penelitian meliputi catatan program, informasi peserta, poster, foto, contoh dokumen pembelajaran, dokumen revisi, sertifikat, tangkapan layar Google Drive, dan komunikasi tertulis. Analisis deskriptif mengidentifikasi enam kategori dokumen pembelajaran serta proses peninjauan dan revisi oleh pihak sekolah. Nilai Tunjuk Ajar Melayu dibahas sebagai kerangka etis potensial bagi pengembangan profesional guru berbantuan AI pada masa mendatang, bukan sebagai materi pelatihan yang telah dilaksanakan. Temuan penelitian menggambarkan kegiatan dan keluaran yang terdokumentasi serta tidak dimaksudkan untuk membuktikan peningkatan kompetensi guru secara kausal.

Keyword:
Gemini AI, Teacher Professional Development, Instructional Administration, Documentary Analysis, Tunjuk Ajar Melayu

Abstract

This article documents teacher professional development activities and the use of Gemini AI for preparing instructional administration in Pekanbaru, Indonesia. The portfolio records 68 teachers associated with activities at SMKS Darul Hikmah, SD Negeri 47 Pekanbaru, and SMP Negeri 11 Pekanbaru. Documentary evidence indicates that the activities at the three schools had different focuses; therefore, they are not treated as a single Gemini AI training programme. The data include programme records, participant information, posters, photographs, sample instructional documents, revised documents, certificates, Google Drive screenshots, and written communications. Descriptive analysis identified six categories of instructional documents and documented school-level review and revision processes. Tunjuk Ajar Melayu values are discussed as a potential ethical framework for future AI-assisted teacher professional development rather than as a component of the training activities already conducted. The findings describe documented activities and outputs and are not intended to establish causal improvements in teacher competence.

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INTRODUCTION

Instructional administration connects lesson planning, classroom implementation, and assessment. Preparing these documents requires teachers to understand curriculum expectations, learning objectives, student characteristics, and the alignment between learning activities and assessment. Research on teachers' instructional competence indicates that the integration of information and communication technology (ICT) into lesson planning is associated with teachers' professional knowledge and pedagogical beliefs (König et al., 2024). Professional development activities that require teachers to produce actual instructional materials can connect conceptual understanding with day-to-day professional tasks. Previous teacher-development programmes have described workshops and mentoring as approaches to supporting teachers in preparing lesson plans and integrating technology into instructional practice (Sari et al., 2025); (Subekti et al., 2024).

Generative artificial intelligence (GenAI) offers teachers tools for drafting and developing instructional documents in response to user prompts. However, AI-generated text cannot automatically be treated as pedagogically appropriate. Its relevance depends on learning objectives, curriculum, subject matter, classroom context, and assessment strategy. Research on teachers' AI literacy highlights the importance of developing teachers' knowledge and understanding of AI technologies to support their effective educational use (Du et

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al., 2024). Studies of teachers' acceptance of generative AI have also highlighted the importance of AI literacy, trust, and the integration of technological and pedagogical knowledge (Al-Abdullatif, 2024). Research examining ChatGPT for lesson-plan generation further suggests that teachers need to critically examine AI-generated instructional materials rather than rely on automated outputs without professional evaluation (Kalenda et al., 2025). These considerations suggest that training should extend beyond demonstrating application features: teachers need opportunities to formulate prompts, evaluate generated content, and revise outputs using their professional judgement.

Previous community engagement programmes have addressed teacher development through practical training and follow-up assistance. Examples include mentoring teachers in the implementation of the Technological Pedagogical Content Knowledge (TPACK) framework, training in the selection and use of instructional media, and support for integrating technology into teaching practice (Sari et al., 2025); (Subekti et al., 2024). Such programmes indicate the value of combining demonstrations with hands-on production and follow-up guidance. In the context of Gemini AI, this approach can be applied to the preparation of several interconnected administrative documents rather than a single teaching resource. Research on AI-supported lesson planning also demonstrates the relevance of examining how teachers interact with AI-generated materials during instructional design (Kalenda et al., 2025).

The documentary portfolio associates 68 teachers with professional-development activities at three Pekanbaru schools: SMKS Darul Hikmah (20 teachers), SD Negeri 47 Pekanbaru (18 teachers), and SMP Negeri 11 Pekanbaru (30 teachers). The evidence does not show that the activity at every school was specifically a Gemini AI training session. The SMKS Darul Hikmah event poster, dated 4 February 2026, describes deep-learning strategies and teaching materials but does not explicitly identify Gemini AI. The SD Negeri 47 documentation describes an AI-related teacher activity, although its exact date is not legible. The SMP Negeri 11 poster, dated 29 August 2026, explicitly refers to digital administration and Gemini certification for teachers. Accordingly, this article distinguishes the broader three-school professional-development context from the more specifically documented AI-related activities.

In Pekanbaru, the contextual relevance of technology-supported teacher development can also be considered through Riau Malay local wisdom, particularly the tradition of Tunjuk Ajar Melayu. Tenas Effendy's compilation presents Tunjuk Ajar Melayu as a body of advice and guidance addressing, among other matters, the pursuit of knowledge, trustworthiness, justice, truthfulness, responsibility, and respectful relations (Effendy, 2004). These values offer an ethical and cultural lens for teachers when evaluating AI-generated instructional materials. For example, amanah can inform responsible use and verification of AI-generated content; adab and respect can guide the tone and inclusiveness of learning materials; responsibility can require teachers to check accuracy and curriculum alignment; and deliberation can encourage collaborative review with colleagues and school leaders. This article uses these values as a contextual interpretive framework, not as a claim that a formal local-wisdom module was delivered during the documented training.

The Technological Pedagogical Content Knowledge (TPACK) framework provides a useful lens for understanding this process. TPACK conceptualises effective technology integration as the interaction between technological knowledge, pedagogical knowledge, and content knowledge (Mishra, P., & Koehler, 2026). The use of Gemini AI requires more than the ability to generate text: teachers must connect technology with pedagogical purposes and subject content. They need to specify learning objectives in prompts, evaluate the relevance of generated material, and adapt it to their students and classroom context. Recent professional-development research based on the Intelligent-TPACK framework demonstrates the importance of integrating AI competencies with pedagogical and content-related knowledge in teacher development (X. Tan et al., 2025).

Existing scholarship has addressed AI literacy, teacher acceptance, professional-development design, and lesson planning (Al-Abdullatif, 2024); (Du et al., 2024); (Kalenda et al., 2025); (König et al., 2024). However, descriptions of AI-supported instructional administration often provide limited product-level evidence of teacher revisions and school-based checking. This study contributes a bounded documentary account of professional-development activities at three school levels in Pekanbaru. It distinguishes evidence of an explicitly Gemini-related workshop from other, differently themed teacher-development activities and interrogates the evidentiary status of document categories, leadership feedback, and digital follow-up. The research questions are: (1) What professional-development activities and AI-specific components are directly documented at each school? (2) Which instructional-administration products and review processes can be identified from the available materials, and what remains unverified? Recent studies of AI-supported lesson planning and teacher professional development underscore the need to distinguish teachers' observable decisions from assumptions about improved competence.

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METHODS

This article presents a descriptive documentary study of teacher professional-development activities and AI-supported instructional-administration work associated with three schools in Pekanbaru, Indonesia. Documentary research provides a systematic approach to examining records and documents as sources of evidence for understanding educational practices and institutional processes (Bowen, 2009). The documentary portfolio reports 68 teachers across SMKS Darul Hikmah, SD Negeri 47 Pekanbaru, and SMP Negeri 11 Pekanbaru. The available event records indicate different emphases across schools: a teaching-device and deep-learning activity at SMKS Darul Hikmah on 4 February 2026; an AI-related teacher activity at SD Negeri 47 with no legible event date in the available image; and a digital-administration/Gemini workshop at SMP Negeri 11 on 29 August 2026. The analysis therefore does not assume that all 68 teachers attended an identical Gemini training intervention. It focuses on the documented implementation process, instructional-administration products, review and revision, certification-related records, and digital document management.

The data sources consisted of available programme and documentary records: participant numbers reported in the innovation portfolio; event posters and photographs; samples of instructional-administration products; available examples of documents before and after revision; certificates and certification-related information; Google Drive screenshots; dated screenshots of document checks; WhatsApp communications with school principals; and written testimonials. The portfolio reports 20 teachers at SMKS Darul Hikmah, 18 at SD Negeri 47 Pekanbaru, and 30 at SMP Negeri 11 Pekanbaru. These figures are presented as organiser-reported programme reach and should be checked against the original attendance lists before submission. The article does not treat all 68 teachers as interview participants; WhatsApp testimonials are treated as written statements, not transcripts of in-depth interviews. The use of multiple documentary sources is consistent with documentary research approaches that emphasise the contextual interpretation of records (Bowen, 2009).

The materials were inventoried by school, evidence type, and reported programme stage. Photographs and posters were treated as evidence of an event or announced topic, rather than evidence that each participant performed a particular task. Examples of instructional documents provided the basis for identifying product types. The original portfolio refers to versions before and after review, but complete matched pairs and a teacher-level register were not provided with this manuscript; therefore, changes in individual products were not scored. Certificate claims were described as reported outcomes pending independent verification, whereas dated screenshots and written communications were considered evidence of document organisation and follow-up only where legible. This approach reflects the importance of assessing documentary evidence according to its origin, purpose, and limitations (Bowen, 2009).

The materials were analysed descriptively in five categories: (1) programme context and participant reach; (2) training and hands-on practice; (3) types and characteristics of instructional-administration products; (4) review, revision, and certification; and (5) digital document management and follow-up. Before-and-after documents were compared by identifying changes visible in the available samples. The analysis did not calculate statistical gains in teacher competence because no pre-test and post-test data were collected. Descriptive qualitative analysis is appropriate for organising documentary evidence into categories and interpreting patterns without making unsupported causal claims (Miles et al., 2020).

Credibility was addressed through source-specific claim checking: a poster was used for a published event topic and date, while reported participant totals, document samples, screenshots, and messages were interpreted only within their evidentiary limits. The figures of 20, 18, and 30 remain organiser-reported and require reconciliation with original attendance records. Triangulation in this paper does not mean that every observation has been independently validated. Triangulation is most useful when different sources are compared critically and the limitations of each source are made explicit (Carter et al., 2014). To support reproducibility, the final author-held archive should include a redacted evidence register recording school, document date, type, origin, anonymity status, and relevant analytical claim.

Limitations include unequal documentation across the three schools, the illegible date for the SD Negeri 47 activity, and the absence of explicit Gemini wording in the SMKS Darul Hikmah event poster. The manuscript does not include complete attendance sheets, a teacher-by-product inventory, paired document versions, a standardised review rubric, or systematic follow-up measures. No pre-test/post-test or comparison group was used. The study can therefore describe the documentary trail and propose an auditable workflow, but cannot estimate training effectiveness, certification success across all attendees, workload reduction, or gains in instructional quality. Explicitly distinguishing findings from methodological limitations strengthens the credibility and transparency of qualitative research.

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Publication of photographs, names, teachers' documents, certificates, and written testimonials requires permission from the relevant schools and identifiable individuals. Student identities, email addresses, telephone numbers, private links, and other unnecessary personal information must be removed or obscured. The author should retain evidence of permission and submit only materials cleared for publication. These procedures are consistent with ethical principles of confidentiality, informed consent, and protection of participants in educational research (BERA, 2024).

RESULTS AND DISCUSSION

Professional Development Context and Participant Reach

The documentary portfolio reports 68 teachers associated with professional-development activities at three schools in Pekanbaru, Indonesia: 20 teachers at SMKS Darul Hikmah, 18 at SD Negeri 47 Pekanbaru, and 30 at SMP Negeri 11 Pekanbaru. However, the documentary evidence differs across institutions in terms of event focus, AI-specific content, and available records.

At SMKS Darul Hikmah, the event poster dated 4 February 2026 refers to deep-learning strategies and teaching materials but does not explicitly mention Gemini AI. At SD Negeri 47 Pekanbaru, a social-media collage documents an AI-related teacher activity, although its exact date is illegible. Meanwhile, the SMP Negeri 11 Pekanbaru poster dated 29 August 2026 explicitly identifies digital administration and Gemini certification as workshop themes.



Figure 1. Event poster for the "Digital Transformation in the AI Era" workshop

These differences indicate that the three schools represent a broader professional-development context rather than a single, uniform Gemini AI intervention. This distinction is methodologically important because participation in a professional-development programme does not necessarily establish completion of identical activities or acquisition of equivalent competencies. Recent reviews of teacher AI literacy similarly emphasise that AI competence is shaped by individual knowledge, professional practice, and institutional conditions (Kokoç et al., 2026); (Ayubian et al., 2026).

The participant figures should therefore be interpreted as organiser-reported programme reach rather than independently verified attendance or completion rates.

Table 1. Participant totals require verification against original attendance records

School	Directly shown by available evidence	Interpretive limit
SMKS Darul Hikmah / 20	4 February 2026: deep-learning strategies and teaching materials event	Poster does not independently establish a Gemini workshop
SD Negeri 47 Pekanbaru / 18	AI-related teacher activity shown in a social-media collage	Event date is unreadable; content and outputs are not individually traceable
SMP Negeri 11 Pekanbaru / 30	29 August 2026: digital-administration and Gemini-related workshop topic	Poster shows announced topic, not verified attendance, work products, or certification pass rate

In relation to recent studies, the distinctive contribution of this case is not proof that Gemini improves teacher competence. Instead, it demonstrates how different documentary sources must be assigned different claims, and how administrative outputs become interpretable only when a dated, teacher-attributed and anonymised revision trail exists. Comparable studies on lesson-planning practice, collaborative teacher design and teacher AI literacy call attention to prompt quality, subject-specific judgement, and the traceability of professional decisions.

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Training Implementation and Hands-on AI Practice

The programme documentation describes explanations, demonstrations, prompt examples, and practical activities involving the preparation of instructional-administration documents using digital tools. In the explicitly Gemini-related activity, prompts were reportedly formulated around school level, subject, topic, learning objectives, and document format.

The expected workflow involved generating an initial draft, checking factual and curricular accuracy, revising the material according to instructional requirements, and retaining teacher responsibility for the final document. However, these training elements are based on the programme account rather than independently recovered training slides or a complete session-by-session syllabus.

Recent research indicates that GenAI can support lesson planning and instructional design, particularly when teachers use iterative prompting and evaluate the generated outputs against pedagogical objectives (Kerr, R. C., & Kim, 2025); (Sun, Y., & Huang, 2025). Nevertheless, technological familiarity alone is insufficient for meaningful integration. Teachers require opportunities to develop critical AI literacy, pedagogical judgement, and the capacity to identify inappropriate or inaccurate AI-generated content (Shenoy, P., & Saarela, 2026); (Kokoç et al., 2026).

The training approach described in the portfolio is therefore consistent with practice-oriented professional development in which teachers move beyond observing demonstrations toward producing and reviewing instructional materials. Nevertheless, the available evidence does not establish that identical training content was delivered across all three schools.



Figure 2. Social-media collage documenting an AI-related teacher activity



Figure 3. Group photograph associated with a teacher-development and teaching-device activity

Instructional-Administration Products and Document Development

The development of instructional-administration documents was a central component of the AI-supported teacher professional development programme. The activities focused on assisting teachers in preparing essential instructional documents, including annual programmes (Program Tahunan/Prota), semester programmes (Program Semester/Prosem), teaching modules or lesson plans (Modul Ajar/RPP), student worksheets (Lembar Kerja Peserta Didik/LKPD), Learning Objective Achievement Criteria (Kriteria Ketercapaian Tujuan Pembelajaran/KKTP), and assessment rubrics. Through hands-on practice, teachers explored how generative AI could support document preparation, content structuring, and the adaptation of instructional materials to learning objectives and classroom needs. This approach reflects the growing emphasis on integrating AI literacy with pedagogical knowledge and practical teaching competencies in teacher professional development (Delaney et al., 2025); (Celik et al., 2026).

These documents represent interconnected elements of instructional planning and assessment. Annual and semester programmes establish instructional priorities, while teaching modules and lesson plans translate those priorities into learning objectives, classroom activities, and assessment procedures. Student worksheets support learner engagement, whereas KKTP and assessment rubrics provide criteria for interpreting learning outcomes.

The integration of GenAI into this workflow potentially supports drafting, organising instructional ideas, and generating alternative learning activities. However, generated materials require evaluation against curriculum expectations, learner characteristics, and assessment objectives. Research on AI-supported lesson planning emphasises that teachers' subject-specific knowledge and pedagogical judgement remain essential when evaluating generated materials (Kerr, R. C., & Kim, 2025); (Sun, Y., & Huang, 2025).

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The documentary portfolio refers to samples of these products, but it does not contain a complete teacher-by-product register or matched examples from all three schools. Therefore, the six categories should be interpreted as reported output types rather than verified completion rates.

Table 2. Reported output categories versus evidence still needed. No completion percentages are inferred.

Output type	What the current portfolio supports	Additional source needed
Annual Program and term plan	Categories named in programme records	Redacted dated examples and teacher–document register
Lesson Plan, Students Worksheet	Categories named; preparation activity described	Original samples and curriculum-alignment checks
Learning Objectives Achievement Criteria, assessment rubrics	Categories named; review described in general	Original scoring criteria and reviewer comments

The contribution of this case is not to demonstrate that Gemini AI improves teacher competence. Rather, it illustrates how instructional outputs must be interpreted according to their documentary status and how stronger claims require traceable records of production and revision. This distinction is consistent with recent research highlighting the need to move beyond self-reported AI competence toward observable evidence of teachers' professional knowledge and instructional decisions (Kokoç et al., 2026); (Khalid et al., 2026).

School-Level Review, Revision, and Human Oversight

The programme archive describes school-level feedback and requests for revision. This provides qualitative evidence of a review process, but it does not establish measurable improvement in instructional-document quality. The review process is important because AI-generated documents may contain factual inaccuracies, curriculum mismatches, inappropriate learning activities, or assessment criteria that do not correspond to the intended learning objectives. Teachers must therefore evaluate generated materials before adopting them in classroom practice.

Recent research on GenAI-supported teacher professional development identifies critical evaluation, pedagogical integration, ethical reasoning, and teacher agency as essential components of responsible AI use (Shenoy, P., & Saarela, 2026); (Khalid et al., 2026). Similarly, research examining teachers' interactions with GenAI in lesson planning highlights the importance of examining actual professional decisions rather than relying exclusively on perceptions of AI competence (Beyond Operational Skills Study, 2026).

The available portfolio indicates that some instructional documents were considered appropriate, whereas others required revision. However, the manuscript does not include complete anonymised before-and-after document pairs, a standardised review rubric, or systematic reviewer records.

Consequently, the findings support a qualitative description of school-level checking but do not justify a claim of uniform improvement across teachers. Future evaluations could employ a shared rubric covering curriculum and learning-objective alignment, factual accuracy, learner appropriateness, clarity of instructional activities, alignment between learning objectives and assessment, and the ethical and responsible use of AI. Such a rubric would provide a more systematic and consistent basis for evaluating instructional quality across teachers and schools.

Digital Document Management and Follow-up

The programme portfolio describes the organisation of instructional documents in Google Drive folders separated by school. The archive also reports need-based document checks and communication with school principals when documents were incomplete or required revision. This arrangement extended the professional-development activity beyond the initial production of instructional drafts. Digital storage facilitated document organisation, retrieval, and checking. However, the evidence does not establish a formal monitoring schedule or demonstrate that all teachers independently maintained their instructional documents over time.

Recent research on AI-related teacher professional development emphasises that sustainable professional learning requires institutional support, guided practice, and opportunities for continued reflection rather than isolated exposure to technological tools (Q. Tan, 2025); (Kokoç et al., 2026). To strengthen future implementation, document management could incorporate a systematic revision register recording the document date, version, reviewer, feedback, responsible teacher, and approval status. Such a process would improve traceability and enable more reliable evaluation of instructional-document development.

Certification and Reported Programme Outcomes

The innovation portfolio reports that participants undertook an examination associated with Gemini AI and that the organiser reported a 100% pass rate. However, the exact certification title, examination provider, issuing organisation, number of examinees, and number of successful candidates require verification against

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original certificates and official examination records. Until those records are available, the reported pass rate should be treated as an organiser-reported outcome rather than independently verified evidence.

Certification outcomes should also be distinguished from instructional competence. Passing an AI-related examination does not necessarily establish that a teacher can independently prepare The documents included the Annual Program, Semester Program, Teaching Modules, Student Worksheets, and Criteria for the Achievement of Learning Objectives and assessment rubrics in accordance with curriculum requirements.

Recent research on teacher AI literacy similarly distinguishes knowledge of AI tools from the ability to apply them critically and pedagogically in professional practice (Kokoç et al., 2026); (Ayubian et al., 2026) Written WhatsApp testimonials from school principals and teachers describe the activities as beneficial and refer to increased confidence in using technology. These statements provide qualitative perspectives on the programme but cannot substitute for standardised competence assessments or systematic evaluation of instructional products.

Riau Malay Local Wisdom as an Ethical Framework for AI Integration

Pekanbaru provides a relevant cultural context for discussing responsible educational technology through Riau Malay local wisdom, particularly Tunjuk Ajar Melayu. (Effendy, 2004) presents Tunjuk Ajar Melayu as guidance concerning knowledge, trustworthiness, justice, truthfulness, responsibility, and respectful relationships.

First, amanah (trustworthiness) requires teachers to verify AI-generated information and avoid using unchecked outputs as authoritative instructional content. This principle emphasizes the importance of accuracy, integrity, and professional trust in the use of AI for educational purposes. Second, adab (proper conduct and respectful communication) encourages teachers to develop instructional materials that respect learners' dignity, cultural backgrounds, and diversity. It also highlights the importance of ensuring that AI-generated content promotes respectful communication and inclusive learning environments.

Third, responsibility requires teachers to maintain professional accountability for curriculum alignment, factual accuracy, learner appropriateness, and assessment validity. Although AI may support instructional planning and material development, teachers remain responsible for evaluating and approving the content before it is used in classroom activities. Fourth, musyawarah (deliberation) supports collaborative review and decision-making among teachers and school leaders before AI-assisted instructional materials are adopted. This principle encourages shared professional judgment and collective responsibility in ensuring instructional quality.

Taken together, these values provide a culturally grounded ethical perspective for future teacher professional-development programmes. They can also inform the development of a review rubric that integrates technical AI literacy with professional responsibility and local cultural values, thereby supporting the ethical, reflective, and context-sensitive use of AI in education.

Nevertheless, the available documentation does not demonstrate that Tunjuk Ajar Melayu was systematically incorporated into the original training. The framework should therefore be interpreted as a contextual contribution of this article rather than an observed programme outcome. Recent discussions of teacher AI literacy similarly emphasise professional judgement, ethical reasoning, and human agency as central elements of responsible AI-supported education (Liu et al., 2026; (Shenoy, P., & Saarela, 2026).

An Integrated Workflow for AI-Supported Instructional Administration

The documentary findings suggest that AI-supported instructional administration should be understood as a connected professional workflow rather than the production of isolated documents. The workflow can be reconstructed into six stages: (1) Establish curriculum requirements and learning objectives. (2) Demonstrate AI-assisted instructional drafting. (3) Formulate contextual prompts. (4) Generate and critically evaluate instructional documents. (5) Revise documents through teacher and school-level feedback. (6) Store approved versions and maintain a traceable document archive.

This proposed workflow is consistent with recent research suggesting that effective GenAI professional development should combine technical fluency, pedagogical integration, critical evaluation, ethical reasoning, and collaborative practice (Shenoy, P., & Saarela, 2026). (Khalid et al., 2026) similarly emphasise that AI-integrated professional development should support teachers' professional judgement rather than replace it.

The six instructional-administration documents identified in this study are interconnected. A teaching module, for example, should align with the learning objectives established in the annual and semester programmes. Similarly, LKPD activities should correspond to the learning objectives, while KKTP and assessment rubrics should provide appropriate criteria for evaluating learning.

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Consequently, the teacher's responsibility extends beyond checking grammatical accuracy or document completeness. It involves evaluating the pedagogical consistency of the entire instructional package. Recent research on teacher–AI interaction in lesson planning reinforces the importance of examining teachers' actual decisions and evaluative practices rather than treating AI-generated content as automatically suitable for instruction (Kerr, R. C., & Kim, 2025); (Sun, Y., & Huang, 2025).

Methodological Implications and Evidence-Based Reporting

The documentary differences across the three schools provide an important methodological lesson for reporting educational professional-development activities.

Attendance records, event posters, photographs, instructional products, certificates, and testimonials represent different forms of evidence. An event poster establishes the announced topic and date, while attendance lists may establish participation. Photographs document selected event activities, instructional products demonstrate the existence of particular materials, and certificates can support credential-related claims when their details are verifiable.

These sources should not be treated as interchangeable evidence. The 68 teachers reported in the portfolio cannot automatically be interpreted as participants in an identical Gemini AI intervention, nor can the existence of document samples establish that every teacher completed all six document categories.

Recent systematic reviews of teacher AI literacy identify a continuing need for research that moves beyond self-reported competence toward observable professional practice and context-sensitive evaluation (Kokoç et al., 2026); (Ayubian et al., 2026).

Future programme evaluation could be strengthened through: (1) A teacher-level attendance and participation register. (2) A product matrix documenting completion and revision status. (3) A common instructional-document quality rubric. (4) Independent review of selected products by multiple evaluators. (5) Baseline and follow-up performance tasks. (6) Longitudinal follow-up to assess sustained classroom use.

These measures would enable future studies to move beyond documentary description toward more rigorous assessments of teacher competence and instructional practice.

Limitations and Future Research

This study has several limitations. First, the documentary evidence differs across the three schools. The SMKS Darul Hikmah poster does not explicitly identify Gemini AI, while the SD Negeri 47 activity has no legible date. Second, participant totals remain organiser-reported and require verification against original attendance lists.

Third, the manuscript does not include complete attendance sheets, a teacher-by-product inventory, matched before-and-after documents, or a standardised review rubric. Fourth, no pre-test, post-test, comparison group, or systematic longitudinal evaluation was conducted.

The study therefore cannot establish the effectiveness of Gemini AI training, quantify improvements in instructional-document quality, verify certification success among all participants, or estimate workload reduction.

Future research should incorporate performance-based assessments, systematic document review, and longitudinal observation of teachers' instructional practices. This direction is consistent with recent research advocating more rigorous, practice-oriented evaluation of AI-integrated teacher professional development (Q. Tan, 2025); (Kokoç et al., 2026); (Khalid et al., 2026).

CONCLUSION

This article has described teacher professional-development activities associated with 68 teachers across three schools in Pekanbaru. The available records show different emphases: a teaching-device and deep-learning activity at SMKS Darul Hikmah, an AI-related teacher activity at SD Negeri 47 Pekanbaru, and a digital-administration/Gemini workshop at SMP Negeri 11 Pekanbaru. The six instructional-administration categories identified in the programme records are annual programmes, semester programmes, teaching modules or lesson plans, student worksheets, criteria for learning objective attainment, and assessment rubrics.

Samples of instructional documents and descriptions of school-level review indicate that products were examined and that some required revision. Digital folders were organised by school and checked as needed. The organiser also reported a 100% pass rate in a Gemini-related examination, but the precise examination name and issuer require verification against the certificates and official results. Because the available materials do not provide pre-test and post-test data, a complete product register, or systematic follow-up measurements, the findings should be understood as a description of activities and documented outputs, not as evidence of statistically measured or causal improvement.

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Future implementation should strengthen the evidence base through a dated activity log for each school, a teacher-by-product completion matrix, anonymised examples of products before and after review, a documented quality rubric, verified certification records, and follow-up assessment of teachers' independent use of AI. A future programme could also integrate Tunjuk Ajar Melayu explicitly into prompt design and review criteria, provided that cultural meanings are checked with reliable sources and local knowledge holders.

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