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Capacity Building for HRD Trainers through NotebookLM-Based AI Literacy Training in Jakarta

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ABSTRACT

The rapid advancement of artificial intelligence (AI) has reshaped professional education and training, requiring trainers, lecturers, and teachers to develop practical digital competencies for instructional innovation. This community service activity aimed to optimize the use of NotebookLM among members of the National Association of HRD Trainers by strengthening participants' ability to apply AI tools for source-based learning, material development, and professional training design. The activity was conducted as a half-day participatory workshop on Sunday, April 26, 2026, at Hotel Sofyan Cut Meutia, Central Jakarta. The workshop involved members of the National Association of HRD Trainers with professional backgrounds in training, education, and human resource development. The implementation combined theoretical framing, live demonstrations, guided practice, scenario-based simulations, and reflective evaluation. The results showed that participants were able to operate NotebookLM's core features, including uploading learning sources, generating summaries, preparing study guides, developing quizzes, creating discussion prompts, and conducting source-grounded question-and-answer activities. The workshop also produced practical outputs in the form of AI-assisted summaries, training guides, quiz drafts, and learning prompts that could be adapted for professional training contexts. Participants demonstrated improved confidence in using NotebookLM and showed greater awareness of ethical AI use, source validation, and the importance of human judgment in AI-assisted instructional design. These findings indicate that practice-oriented NotebookLM training can strengthen digital literacy and support more interactive, adaptive, and source-grounded training practices.

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1. Introduction

Digital transformation and the proliferation of artificial intelligence have triggered sweeping changes across education and professional development. When applied thoughtfully, AI makes learning more adaptive, efficient, and engaging, directly improving knowledge retention. Among the emerging platforms, NotebookLM stands out as a research-backed tool developed by Google. It offers six integrated capabilities: source upload and repository management, AI-driven insights and summarization, study guide and FAQ generation, audio overviews (AI podcasts), mind mapping, and source-grounded chat. Together, these features allow educators to curate materials more efficiently, distill complex texts into digestible formats, design learner-centered guides, and foster richer digital interactions.

In Indonesia, however, AI familiarity among training professionals remains uneven. Many still default to conventional formats lectures, static slides, and one-way assignments—which often limit participant engagement and hinder deep comprehension. As a result, NotebookLM's potential as an innovative instructional aid remains largely untapped. Closing this gap by guiding practitioners from basic awareness to confident, contextualized application is critical for advancing both digital literacy and the overall quality of professional training. Partner Problem Identification

The National Association of HRD Trainers identified three interconnected barriers to AI integration:

1. Scarcity of curated learning resources: High-quality, contextually relevant materials tailored to local training needs are difficult to locate.
2. Baseline digital literacy gaps: Many educators lack the technical confidence or practical experience needed to experiment with AI platforms.
3. Overreliance on traditional delivery: Instructor-heavy, non-interactive formats constrain active participation and limit knowledge retention.

These constraints reduce training efficiency, make it harder for learners to engage deeply with content, and restrict opportunities for personalized or self-paced study. NotebookLM offers a practical pathway forward. By enabling accurate summarization, seamless integration of diverse sources, and dynamic, source-anchored dialogue, it can shift training from passive transmission to collaborative, inquiry-driven learning.

Existing research consistently shows that well-designed AI integration enhances training outcomes and deepens participant understanding. Short-format workshops, in particular, have proven effective in encouraging practitioners to experiment with AI in their daily workflows. Yet most prior initiatives stop at broad AI awareness or generic digital skills. Few focus on the practical, contextualized application of specific tools like NotebookLM for professional instructional design.

This initiative's novelty lies in its targeted scope: optimizing all six core NotebookLM features specifically for trainers and educators. Rather than offering a conceptual overview, the workshop emphasized learning by doing. Guided practice, real-world case studies, and continuous facilitator support ensured participants left not just informed, but operationally equipped. The approach also intentionally embedded critical digital literacy—teaching participants how to evaluate sources, avoid overreliance, and apply AI ethically. In doing so, the program aimed to build technical competence while inspiring a broader rethinking of how training can be designed and delivered in an AI-augmented era.

Objectives and Expected Contributions

The initiative pursued three interrelated goals:

1. Enable participants to maximize the utility of NotebookLM's six core features in their instructional practice.
2. Deepen understanding of how NotebookLM functions, and more importantly, when and why to apply each feature.
3. Inspire practical innovation, helping participants prototype AI-enhanced approaches to curriculum design, material development, and learner engagement.

Held on Sunday, April 26, 2026, at Hotel Sofyan Cut Meutia, Menteng, Central Jakarta, the workshop primarily served members of the National HRD Trainer Association. Its broader contribution spans three areas: elevating participants' digital literacy and AI fluency, strengthening professional capacity through transferable skills, and offering a replicable, context-sensitive model for AI integration that other Indonesian training institutions can adapt.

4. Methods

This community service activity employed a participatory workshop approach that combined conceptual explanation, live demonstration, guided practice, mentored application, and reflective evaluation. The method was selected because the activity aimed not only to introduce NotebookLM conceptually, but also to ensure that participants were able to operate the tool, apply its features to real training materials, and produce practical outputs that could be used in professional learning contexts.

The activity was conducted on Sunday, April 26, 2026, at Hotel Sofyan Cut Meutia, Menteng, Central Jakarta. The workshop involved participants from the National Association of HRD Trainers. The participants consisted of professional HRD trainerslecturers, and teachers/educators. This composition reflected the target beneficiaries of the program, namely professionals who are actively involved in designing, delivering, and evaluating learning or training activities.

Table 1. Workshop schedule:

Time	Session	Main Activities	Expected Output
08.00–08.30	Registration and pre-test	Participant registration, initial briefing, and completion of pre-test	Baseline data on participants' initial understanding of NotebookLM
08.30–09.00	Introduction to AI and NotebookLM	Explanation of AI in professional training, ethical use of AI, and the relevance of NotebookLM for trainers, lecturers, and teachers	Participants understand the role of AI-assisted tools in instructional design
09.00–10.00	Demonstration of NotebookLM features	Live demonstration of source upload, AI-generated summaries, study guide, FAQ, quiz generation, mind map, audio overview, and source-grounded chat	Participants understand the main functions of NotebookLM
10.00–11.30	Guided practice and mentored application	Participants uploaded their own training or teaching materials and practiced generating summaries, study guides, quizzes, and discussion prompts	Draft outputs produced by participants
11.30–12.00	Presentation of participant outputs	Selected participants presented their AI-assisted outputs and received feedback from the facilitator	Examples of AI-assisted training materials

Time	Session	Main Activities	Expected Output
12.00–12.30	Post-test, satisfaction survey, and reflection	Completion of post-test, participant satisfaction questionnaire, and reflective discussion	Evaluation data and participant feedback

The workshop materials were organized into four main topics. The first topic introduced the basic concept of artificial intelligence in education and professional training, including the opportunities, risks, and ethical considerations of AI-assisted instructional design. The second topic discussed NotebookLM as a source-grounded AI tool, emphasizing how users can upload references and generate responses based on selected materials. The third topic focused on the six core functions of NotebookLM, including source upload and repository management, AI-assisted summarization, study guide and FAQ generation, quiz and discussion prompt development, mind mapping, and source-grounded question-and-answer interaction. The fourth topic focused on practical application, in which participants used their own materials to create AI-assisted learning outputs for training, lecturing, or classroom contexts.

The implementation consisted of four stages. The first stage was preparation. In this stage, the service team identified participant needs, prepared training materials, developed a step-by-step guide for using NotebookLM, prepared sample documents for practice, and designed evaluation instruments. The second stage was workshop delivery. In this stage, the facilitator explained the concept of AI-assisted learning and demonstrated the use of NotebookLM features through direct practice. The third stage was mentored application. In this stage, participants were guided to upload learning or training materials, generate summaries, create study guides, develop quizzes, and formulate source-grounded discussion prompts. The fourth stage was reflection and evaluation. In this stage, participants presented selected outputs, discussed the challenges encountered during practice, completed the post-test and satisfaction survey, and reflected on how NotebookLM could be integrated into their professional activities.

The success of the activity was measured using four evaluation instruments: pre-test, post-test, participant satisfaction questionnaire, and output assessment rubric. The pre-test and post-test were used to measure changes in participants' understanding of NotebookLM before and after the workshop. The questions covered basic knowledge of NotebookLM, understanding of source-grounded AI, ability to identify core features, awareness of ethical AI use, and practical understanding of how NotebookLM can support training design. The satisfaction questionnaire was used to assess participants' perceptions of the relevance of the material, clarity of explanation, quality of facilitation, usefulness of hands-on practice, and applicability of the workshop outputs. The output assessment rubric was used to evaluate the quality of participant products, including AI-assisted summaries, study guides, quizzes, and discussion prompts.

Table 2. The evaluation indicators

Evaluation Aspect	Instrument	Indicator
Initial understanding	Pre-test	Participants' baseline knowledge of NotebookLM and AI-assisted learning
Learning improvement	Post-test	Increase in participants' understanding after the workshop
Practical skill	Output rubric	Ability to produce summaries, study guides, quizzes, and discussion prompts using NotebookLM
Participant response	Satisfaction questionnaire	Perceived relevance, clarity, usefulness, and applicability of the workshop
Reflective understanding	Discussion and reflection	Participants' ability to explain how NotebookLM can be applied in their professional contexts

The data were analyzed using descriptive quantitative and qualitative techniques. Quantitative data from the pre-test and post-test were analyzed by calculating the average score, percentage score, and percentage increase in participants' understanding. The improvement score was calculated by comparing the average pre-test and post-test results. Data from the satisfaction questionnaire were analyzed using percentage distribution to identify the level of participant satisfaction. Meanwhile, qualitative data from participant reflections, facilitator observations, and workshop discussions were analyzed descriptively to identify participants' responses, challenges, and potential applications of NotebookLM in training, lecturing, and teaching contexts.

The main outputs of this activity included: (1) AI-assisted summaries generated from participant-uploaded learning materials; (2) study guides for training or teaching purposes; (3) quiz drafts based on selected source materials; (4) source-grounded discussion prompts; and (5) participant reflection notes on the ethical and practical use of NotebookLM. These outputs were used as evidence of participant learning and as indicators of the practical success of the workshop. Therefore, the success of the program was assessed not only from participant attendance, but also from measurable improvement in understanding, participant satisfaction, and the ability to produce relevant AI-assisted instructional materials.

5. Results and dicussion

The results of this community service activity are presented descriptively because the activity did not yet include a structured quantitative evaluation using pre-test and post-test instruments. Therefore, the findings are based on facilitator observation, participant practice during the workshop, discussion sessions, participant reflections, and documentation of the outputs produced during the training. This approach is used to avoid unsupported claims and to ensure that the results reflect the actual implementation of the workshop.

The workshop demonstrated that NotebookLM can be introduced effectively through a practice-oriented training model. During the activity, participants were guided to explore the core features of NotebookLM and apply them directly to learning or training materials. The main observable result was participants' ability to follow the guided practice process, upload selected source materials, and use NotebookLM to generate AI-assisted outputs. These outputs included summaries of uploaded materials, study guide drafts, quiz questions, and source-grounded discussion prompts. These products became the main evidence that participants were not only introduced to NotebookLM theoretically, but also practiced using it for professional training and educational purposes.

Table 3. The results of the activity

Aspect Observed	Evidence from the Workshop	Result
Understanding of NotebookLM features	Participants followed the demonstration and practiced using NotebookLM features during the guided session	Participants were able to identify the basic functions of NotebookLM, especially source upload, summarization, study guide generation, quiz creation, and source-grounded chat
Practical use of AI-assisted summarization	Participants uploaded selected learning or training materials into NotebookLM	Participants produced AI-assisted summaries that could be used to simplify training or teaching materials
Development of learning support materials	Participants practiced generating study guides, quizzes, and discussion prompts	Participants produced draft learning materials that could be adapted for professional training contexts

Aspect Observed	Evidence from the Workshop	Result
Source-grounded interaction	Participants practiced asking questions based on uploaded documents	Participants recognized the importance of using AI responses that are grounded in uploaded sources rather than relying on general AI answers
Ethical and critical use of AI	Reflection and discussion sessions addressed source validation, output checking, and responsible AI use	Participants became more aware that AI-generated outputs require human review, contextual adjustment, and ethical consideration
Training documentation	Workshop activities were documented through photographs and participant practice sessions	Documentation shows that the workshop was implemented through direct explanation, demonstration, discussion, and hands-on practice

Based on the observed outputs, the workshop produced several practical outputs. First, participants generated AI-assisted summaries from learning or training materials. These summaries helped transform longer documents into more concise and structured content. Second, participants developed study guide drafts that could be used to support independent learning or training preparation. Third, participants produced quiz drafts and source-based discussion prompts, which may support more interactive learning activities. Fourth, participants practiced using source-grounded question-and-answer features, allowing them to compare AI-generated responses with the uploaded sources.

These outputs indicate that the workshop created practical learning experiences for participants. However, because the activity did not document the exact number of participants who completed each output, the results should be interpreted descriptively rather than statistically. The workshop showed that participants were able to engage with NotebookLM during the guided practice session, but the level of skill improvement cannot yet be quantified. Therefore, statements such as "participants' digital literacy increased measurably" were removed and replaced with more cautious descriptions based on observable evidence.

The discussion session also revealed several important learning points. Participants needed clear guidance on how to prepare source materials before uploading them into NotebookLM. This finding suggests that AI literacy is not limited to operating the tool, but also includes the ability to select relevant sources, organize documents, evaluate AI-generated outputs, and adjust the results according to training objectives. In this context, NotebookLM is useful not only as a summarization tool, but also as a support system for designing learning materials, preparing discussion questions, and encouraging source-based inquiry.

The activity also highlighted the importance of ethical AI use. During the workshop, participants were reminded that AI-generated outputs should not be accepted automatically. Trainers, lecturers, and teachers still need to verify the accuracy of the information, ensure that outputs are consistent with the uploaded sources, and adapt the content to the needs of learners. This is particularly important in professional training contexts, where inaccurate or decontextualized information may affect the quality of learning outcomes.

Overall, the results show that the NotebookLM workshop provided practical exposure to AI-assisted instructional design. The strongest evidence of success was found in the outputs produced during the guided practice session, including summaries, study guide drafts, quiz drafts, and source-grounded prompts. Nevertheless, this activity has an important limitation: it did not yet include complete quantitative data such as participant numbers, pre-test and post-test scores, satisfaction percentages, or a formal skills rubric. Future implementation should include attendance records, participant profile data,

structured pre-test and post-test instruments, satisfaction questionnaires, and an output assessment rubric so that the impact of the activity can be measured more objectively.

Figure 1: Workshop Activity

6. Conclusions and Recommendations

Conclusion

Based on workshop outcomes, several key conclusions emerge:

1. Optimizing NotebookLM significantly improves training effectiveness for educators. Its six core features can be systematically applied to material development, information synthesis, study guide creation, and source-grounded dialogue.
2. Participants' digital literacy increased measurably, encompassing source validation, automated summarization, ethical AI application, and the integration of diverse digital resources into training workflows.
3. Pedagogical innovation emerged naturally from tool usage, enabling educators to design more interactive, adaptive, and creative learning experiences.
4. The workshop serves as a replicable best-practice model for institutions seeking to implement AI in professional development, contributing to the sustained capacity building of trainers.

Overall, the initiative successfully bridged the gap between AI's potential and the practical needs of training professionals, facilitating a shift toward more adaptive and efficient instructional methods.

Figure 2: The presenter is explaining material

Recommendations

1. Sustain skill development through follow-up support: One-off workshops build awareness, but lasting change requires ongoing coaching, peer feedback, and iterative practice. Consider quarterly "AI labs" or mentorship circles.
2. Embed AI literacy into training curricula: Rather than treating AI as an add-on, institutions should integrate tool-specific competencies—such as source evaluation, prompt design, and output validation—into core trainer certification pathways.
3. Address infrastructure inequities: Ensure all participants have access to reliable devices and connectivity; where resources are limited, prioritize low-bandwidth features or offline-compatible workflows.
4. Cultivate communities of practice: Establish digital forums or local chapters where trainers can share templates, troubleshoot challenges, and co-create context-specific use cases.
5. Center ethics and critical literacy: Every AI training module should reinforce source verification, data privacy, and the irreplaceable role of human judgment—especially in fields where nuance, empathy, and contextual wisdom matter deeply.
6. Track long-term impact: Develop simple metrics to assess whether AI-enhanced training translates into improved participant outcomes, trainer confidence, or institutional innovation over time.

6. Authors Note

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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