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Workshop on Enhancing the Capacity of Science Teachers through the Utilization of Local Potential and Science Process Skills in Garut Regency

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ABSTRACT

Local potential refers to the various resources available within a particular region that can be utilized as learning resources in science education to strengthen the connection between scientific concepts and students' surrounding environment. This community service activity was conducted through a workshop on the integration of local potential and science process skills for science teachers in Garut Regency. The activity involved 26 science teachers who participated in material presentations, discussions, and an evaluation using a participant response questionnaire. The questionnaire results indicated highly positive responses, with 92.30% of participants strongly agreeing that the resource person demonstrated mastery of the material, 100% strongly agreeing with the opportunity provided for discussion, 88.46% strongly agreeing with the clarity of the material delivery, and 84.61%–100% strongly agreeing with the usefulness of the activity, the relevance of the material, and its applicability to science learning. The findings indicate that participants perceived the workshop as beneficial in strengthening their understanding of the integration of local potential and science process skills. In addition, participants expressed positive responses regarding the relevance of the materials to their instructional needs and their potential application in contextual and meaningful science learning in schools. The results of this activity indicate that the field-needs-based workshop was very well received by the participants and has the potential to support the professional development of science teachers by strengthening their knowledge, motivation, and reflection on environment-based teaching practices.

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INTRODUCTION

Science education plays an important role in developing students who are able to think critically, logically, and scientifically in response to the advancement of science and technology. Science is understood not only as a body of concepts, facts, and principles but also as a scientific process that requires students to observe, investigate, and discover knowledge independently. Through science learning, students are expected to develop scientific knowledge, skills, and attitudes to comprehensively understand natural phenomena (Irsan, 2021). Therefore, science instruction should be designed meaningfully so that it is oriented not only toward mastery of content but also toward the development of students' scientific thinking skills (Suryanda et al., 2020).

Nevertheless, the implementation of science learning in schools continues to face various challenges. Instruction tends to be teacher-centered and emphasizes conceptual mastery through memorization rather than scientific inquiry. The reliance on textbooks as the primary learning resource, combined with the dominance of lecture-based teaching methods, has limited the optimal development of students' active engagement (Firda et al., 2021). This condition has resulted in low

levels of critical thinking, underdeveloped scientific skills, and limited student ability to relate scientific concepts to phenomena in their surrounding environment.

These issues are also evident among science teachers in Garut Regency. Based on the results of the initial needs assessment conducted through coordination with the Science Subject Teacher Forum (MGMP), discussions with partner schools, and informal interviews with several science teachers, many teachers still experience difficulties in integrating local potential into science instruction and designing learning activities that emphasize science process skills. Classroom instruction remains dominated by content delivery, while the use of the local environment as a learning resource has not yet been optimized. This condition indicates the need to strengthen teachers' capacity to design contextual science learning that is aligned with the characteristics of Garut Regency, which possesses abundant natural resources and diverse socio-cultural potential.

In this context, the utilization of local potential represents a relevant approach to supporting the quality of science learning. Local potential refers to the various resources, advantages, and distinctive characteristics of a region that can serve as contextual learning resources (Endah, 2020; Rumelan et al., 2023). Integrating local potential enables students to connect scientific concepts with authentic experiences in their daily lives, thereby making learning more meaningful and relevant (Lestari & Rahmita, 2025).

In addition, the development of Science Process Skills (SPS) constitutes an essential aspect of science education. SPS includes the abilities to observe, classify, formulate hypotheses, conduct experiments, analyze data, and draw conclusions based on scientific evidence (Eliyana, 2020). Mastery of SPS enables students not only to understand scientific concepts but also to think and act scientifically (Ariyansyah & Nurfathurrahmah, 2022). Several teacher training and mentoring programs focusing on contextual science instruction and the enhancement of SPS have previously been implemented and have demonstrated positive outcomes in supporting the implementation of higher-quality science learning (Barus et al., 2024; Nurjanah et al., 2024). However, activities that specifically integrate the local potential of Garut Regency with the enhancement of Science Process Skills remain limited. Therefore, this community service program offers a novel contribution by directly integrating the local potential of Garut Regency with the strengthening of Science Process Skills in a practice-based workshop specifically designed to meet the needs of science teachers in the region.

Based on the foregoing, this community service program aims to facilitate science teachers in exploring the integration of local potential into science instruction while strengthening their understanding of Science Process Skills through a practice-based workshop. This activity is expected to provide participants with meaningful learning experiences in designing science instruction that is more contextual, meaningful, and student-centered in Garut Regency.

METHOD

The community service program was conducted in the form of a capacity-building workshop for science teachers aimed at facilitating teachers' understanding of the integration of local potential and Science Process Skills (SPS) into science learning. The activity employed a participatory approach through presentations, interactive discussions, question-and-answer sessions, and reflection, enabling participants to actively engage throughout the training process.

The implementation of the program consisted of three stages: planning, preparation, and implementation. During the planning stage, the team conducted a literature review on local potential that could be integrated into science learning, as well as on relevant concepts of Science Process Skills. The preparation stage included the development of workshop materials, coordination with schools and the Science Subject Teacher Forum (MGMP) in Garut Regency, and the preparation of facilities and supporting infrastructure. The implementation stage was conducted face-to-face on Thursday, February 5, 2026, from 08:00 to 12:00 WIB at Garut University.

The workshop involved 26 participants who were recruited through coordination with schools and the Science Subject Teacher Forum (MGMP) in Garut Regency. All participants were junior high school science teachers as well as senior high school teachers of Biology, Chemistry, and Physics. Throughout the workshop, participants attended presentations, group discussions, question-and-

answer sessions, and reflection activities concerning the application of local potential in science learning.

The program evaluation was conducted at the end of the workshop using a participant response questionnaire developed by the implementation team based on training evaluation indicators and aligned with the objectives of the program. The questionnaire consisted of eight evaluation aspects: (1) the resource person's mastery of the material, (2) opportunities for discussion and question-and-answer sessions, (3) clarity of the material presentation, (4) the contribution of the material to expanding participants' knowledge, (5) the applicability of the material to science learning, (6) the relevance of the material to participants' needs, (7) the benefits of the workshop, and (8) the adequacy of facilities and supporting resources during the implementation of the activity.

The instrument employed a four-point Likert scale consisting of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). This scale was selected to encourage participants to provide more definitive responses to each statement without offering a neutral option. All participants completed the questionnaire immediately after the workshop concluded.

The data were analyzed descriptively using percentages for each response category. Percentages were calculated by dividing the number of participants selecting a particular response category by the total number of respondents and then multiplying the result by 100%. The findings were subsequently used to describe participants' perceptions of the quality of the workshop implementation, the suitability of the materials to teachers' needs, and the benefits of the program as a basis for evaluating the implementation of the community service program.

RESULTS AND DISCUSSION

RESULT

The community service program organized by the Science Education Study Program, Garut University, carried the theme “The Importance of Integrating Local Potential and Science Process Skills in Science Learning.” The activity was conducted face-to-face over one day from 08:00 to 12:00 WIB and was attended by 26 participants consisting of junior high school science teachers, senior high school Biology, Physics, and Chemistry teachers, as well as students.

Activity Implementation

The workshop was carried out through several structured stages, including the opening session, material presentation, discussion, and closing session. The sequence of activities is presented in Table 1.

Table 1. Workshop schedule

Time	Activity	Organizer
08.00–09.00	Opening ceremony, prayer, singing the Indonesian national anthem *Indonesia Raya* and the UNIGA Hymn, welcoming remarks by the Head of the Study Program	Workshop Committee
09.00–11.00	Presentation on Local Potential and Science Process Skills	Speaker
11.00–12.00	Question-and-answer session and discussion	Speaker & Participants
12.00	Closing	Committee

The workshop was conducted according to the planned schedule and was actively attended by 26 participants from beginning to end. The participants demonstrated strong engagement during the discussion sessions, particularly in exploring the integration of local potential and Science Process Skills into science learning in schools. Their enthusiasm was further reflected in the numerous questions raised during the question-and-answer session.

Participant Response Questionnaire Results

The workshop was evaluated through a participant response questionnaire to assess the quality of its implementation. The results indicated highly positive responses across all evaluation aspects.

Table 2. Results of the participant response questionnaire (n = 26)

Evaluation Aspect	Response Results
Speaker's mastery of the material	92.30% strongly agree; 7.70% agree
Time allocated for discussion/question-and-answer	100% strongly agree
Clarity of the material presentation	88.6% strongly agree; 11.4% agree
Improvement of participants' knowledge	84.61% strongly agree; 15.39% agree
Applicability to science learning	100% strongly agree
Relevance of the material to participants' needs	88.6% strongly agree; 11.4% agree
Benefits of the workshop	88.6% strongly agree; 11.4% agree
Support from facilities and infrastructure	84.61% strongly agree; 15.39% agree

These findings indicate that all aspects of the workshop received positive evaluations, with the majority of responses falling into the "strongly agree" category.

Figure 1. Opening Remarks by the Head of the Science Education Study Program (*Source: Authors*)

Figure 2. Presentation on local potential and science process skills (*Source: Authors*)

Figure 3. Group photo at the end of the workshop session with all speakers and participants (*Source: Authors*)

Summary of the Main Findings

Based on the questionnaire results, the main findings of the program are as follows:

1. All participants (100%) strongly agreed that the time allocated for discussion was adequate.
2. All participants (100%) stated that the workshop materials could be implemented in science learning.
3. The majority of participants (88.6%–92.30%) considered that the speaker had excellent mastery of the material and delivered it clearly.
4. Participant satisfaction regarding the benefits of the workshop was in the high category (84.61%–88.6%).

These findings indicate that the workshop received positive responses from participants and was well accepted in terms of its implementation, content, and overall benefits. Documentation of the community service activities during the presentation session entitled "The Importance of Local Potential and Science Process Skills in Science Learning" is presented in Figures 1–3.

DISCUSSION

The community service program conducted through the workshop entitled "The Importance of Integrating Local Potential and Science Process Skills in Science Learning" demonstrated that the program received highly positive responses from participants regarding the workshop materials, implementation, and relevance to the needs of science instruction. This finding is supported by the evaluation results, which showed that all aspects of the workshop received positive responses from participants. A total of 92.30% of participants strongly agreed that the speaker demonstrated excellent mastery of the material, 88.6% strongly agreed that the material was presented clearly and systematically, and 100% of participants stated that the workshop materials could be implemented in science learning. These findings indicate that participants perceived the workshop as beneficial in strengthening their understanding of the integration of local potential and Science Process Skills (SPS), as well as being relevant to the needs of classroom instruction. These findings are consistent with the opinion of Suardipa & Primayana (2023), who state that program evaluation is an essential process for assessing the effectiveness of program implementation and serves as the basis for determining program sustainability. Evaluation results can also be used as a reflection tool for improving future programs (Hia et al., 2022).

The implementation of this program also highlights the importance of teacher professional development as one of the efforts to support educational quality improvement. Training program evaluation is necessary to identify participants' responses to program implementation while also serving as the basis for improving subsequent programs (Kuswara, 2024). Teacher professional development has been widely recognized as a key pillar in improving educational quality and student learning outcomes (Pinzón et al., 2026). Furthermore, high-quality professional development contributes to enhancing teachers' skills, confidence, and ability to implement evidence-based instructional practices (Hasson et al., 2026). Babayiğit et al. (2025) also state that teacher professional development is associated with improvements in teaching quality, instructional effectiveness, and student learning achievement. In the context of this program, the questionnaire results showed that participants provided highly positive evaluations of the workshop materials, although the evaluation conducted did not directly measure changes in teachers' competencies.

One of the main topics presented during the workshop was the utilization of local potential as a learning resource. The questionnaire results showed that 88.6% of participants strongly agreed that the materials provided were relevant to their needs, while 84.61% strongly agreed that the workshop provided them with new knowledge. These findings indicate that participants perceived the integration of local potential as a relevant and beneficial approach for science instruction. Local potential enables teachers to connect scientific concepts with phenomena found in students' surrounding environments, thereby making science learning more contextual and meaningful. This approach is consistent with the view that environment-based learning enhances the relationship between subject matter and students' authentic experiences (Endah, 2020; Rumelan et al., 2023). In addition, contextual learning provides more authentic learning experiences, thereby helping students understand abstract concepts more easily. Learning that utilizes the surrounding

environment is also relevant to students with diverse characteristics, interests, and learning styles (Hanyfah et al., 2025).

In addition to strengthening the utilization of local potential, the workshop also emphasized the importance of Science Process Skills (SPS) in science education. Essentially, science should not only be viewed as a collection of concepts or products of knowledge but also as a scientific process that requires students' active involvement in constructing knowledge. Science is a discipline that systematically studies natural phenomena through observation and scientific investigation (Elisa et al., 2023). Therefore, science learning requires an empirical approach that emphasizes verification through research, observation, and experimentation (Pratama & Widodo, 2023).

Science Process Skills encompass various scientific abilities, including observation, measurement, classification, hypothesis formulation, variable control, data interpretation, scientific communication, and drawing conclusions (Wati et al., 2022). These skills constitute the foundation of the scientific method and should be developed through science instruction. The high percentage of participants who stated that the workshop materials were beneficial and applicable to classroom instruction indicates positive perceptions regarding the relevance of SPS in science education. These findings suggest that participants viewed science learning development as being oriented not only toward conceptual understanding but also toward the process of acquiring scientific knowledge. This is particularly important considering that some teachers still have not optimally implemented innovative instructional models, resulting in teacher-centered learning that provides limited opportunities for students to develop scientific skills (Hayati, 2022).

The relationship between local potential and Science Process Skills emerged as one of the important aspects of this workshop. Integrating both components enables science learning to become more active, contextual, and experience-based. Local potential provides authentic objects that students can directly observe, while SPS serves as a means for scientifically investigating these phenomena. Consequently, students not only learn scientific concepts abstractly but also gain direct experience in conducting scientific inquiry. This approach is consistent with the concept of experiential learning, which positions experience as the primary source of knowledge and skill development.

From the teachers' perspective, all participants (100%) stated that the workshop materials could be implemented in science instruction. Based on participants' self-reports, these findings indicate a perceived readiness to implement the workshop materials in science classrooms. However, these results reflect participants' perceptions immediately after attending the workshop and do not yet demonstrate actual changes in teacher competencies or classroom implementation. Nevertheless, the findings provide evidence that the workshop materials were perceived as relevant to teachers' needs in developing environment-based learning. This condition is consistent with the view that teacher quality is a critical factor influencing the quality of instructional processes and student learning outcomes (Hanushek, 2020; Murphy-Graham et al., 2026). Therefore, training programs designed according to field needs have the potential to support teacher professional development and the implementation of more contextual learning practices (Zhang et al., 2025; Mwandondwa, 2025).

Nevertheless, the implementation of local potential- and Science Process Skills-based learning continues to face several challenges. Some teachers require further mentoring in developing systematic instructional materials that are appropriate to the characteristics of their respective school environments. In addition, limitations in time, facilities, and experience in designing contextual learning also represent challenges that need to be addressed. These challenges are consistent with the findings of Hidayanti et al. (2026), who state that science learning frequently encounters difficulties in accommodating the diverse needs of students and varying school conditions. Therefore, ensuring the sustainability of the program through continuous mentoring, advanced training, and the development of teaching materials based on local potential is an important step in supporting the implementation of the workshop outcomes in classroom practice.

CONCLUSIONS

Based on the results of the community service program conducted through the workshop on the integration of local potential and Science Process Skills (SPS) in science learning, it can be concluded that the program received highly positive responses from the participants. The questionnaire results showed that all aspects of the workshop were rated in the **strongly agree** category, with percentages ranging from 84.61% to 100%, reflecting participants' positive perceptions of the workshop materials, implementation process, and overall benefits.

Participants considered that the speaker demonstrated excellent mastery of the material (92.30% strongly agree), provided adequate opportunities for discussion (100% strongly agree), and delivered the material clearly and systematically (88.46% strongly agree). In addition, participants expressed positive responses regarding the relevance of the workshop materials to instructional needs, the benefits of the workshop, and the potential application of the materials in science learning. These findings indicate that participants perceived the workshop as beneficial in strengthening their understanding of the integration of local potential and Science Process Skills in science instruction. However, these findings were based on participants' perceptions obtained through the post-workshop response questionnaire and did not directly measure changes in teachers' competencies or the implementation of classroom instruction.

Based on these findings, the workshop has the potential to serve as a form of teacher professional development that supports the integration of local potential and Science Process Skills in science learning. Therefore, follow-up efforts are needed in the form of continuous mentoring, implementation-oriented training, and the development of instructional materials and teaching resources based on local potential to optimize the application of the workshop outcomes in classroom practice. Furthermore, similar programs in the future are recommended to include evaluations that measure changes in teachers' competencies, for example through pre-test and post-test designs, analysis of instructional materials, or classroom implementation observations, so that the impact of the program can be assessed more comprehensively.

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