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STRENGTHENING TEACHER COMPETENCY THROUGH HOTS-ORIENTED IN-DEPTH LEARNING TEACHING MODULE DEVELOPMENT TRAINING FOR ELEMENTARY SCHOOL TEACHERS IN PAREPARE CITY

MarwatiAbd. Malik[1*], Mas'ud B[1], Nurhasanah[1], Jamil[1], Nur Fajri Irvan[2], Irena Novarlia[3], Bagus Syarifuddin Latif[4]

[1]Mathematics Education Departement, Faculty of Teacher Training and Education
Muhammadiyah University of Parepare
Jalan Jenderal Ahmad Yani Km. 6, Kelurahan Bukit Harapan, Kecamatan Soreang, Kota Parepare, Sulawesi Selatan - Indonesia
[2]STIE AMKOP Makassar, Sulawesi Selatan - Indonesia
[3]Universitas Pendidikan Indonesia, Jawa Barat - Indonesia
[4]Universitas Nasional, DKI Jakarta - Indonesia

*Corresponding Author: marwati.pare63@gmail.com

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ABSTRACT This community service activity was motivated by the gap between the demands of the Independent Curriculum, which emphasizes in-depth learning and the development of Higher Order Thinking Skills, and the practical readiness of elementary school teachers in Parepare City, particularly in developing teaching modules that go beyond routine exercises and lower-order thinking questions. This program aims to improve teachers' understanding of the concepts of in-depth learning and Higher Order Thinking Skills (HOTS), train teachers in developing teaching module components aligned with the Independent Curriculum, and produce teaching modules ready for pilot testing as examples of good practice in partner schools. The program was implemented over three months in four partner elementary schools, involving twenty teachers through a participatory action research approach that included a needs survey, training based on adult education principles, classroom implementation assistance, and evaluation through observation, interviews, module document assessment, and pre- and post-training tests. The results showed significant improvements in three main aspects: understanding of the concepts of in-depth learning and HOTS, skills in developing teaching module components, and the quality of the teaching modules, which shifted from fair to good to excellent. It was concluded that this program effectively strengthened the professional competencies of elementary school teachers and produced teaching modules relevant to the Independent Curriculum. Recommendations include ongoing reinforcement through teacher learning communities, mentoring through to the classroom reflection stage, development of a teaching module bank, expansion of the program to more schools, and further research on the impact of the modules on students' learning outcomes and HOTS.

KEYWORDS: *Deep Learning; HOTS; Teaching Modules; Independent Curriculum; Elementary School Teachers.*

1. INTRODUCTION

The changing paradigm of 21st century education demands that learning is no longer oriented towards memorization, but towards the development of critical, creative, communicative and collaborative thinking skills (4C) as key competencies that must be integrated into the learning process, (Herlinawati et al., 2024; Thornhill-miller et al., 2025). The Independent Curriculum reinforces this demand through an emphasis on strengthening the Pancasila Student Profile, including through the Pancasila Student Profile Strengthening Project (P5) and the development of higher-order thinking skills (HOTS) in various subjects starting from the elementary school level, (Kamil et al., 2024; Rachman et al., 2024). Classroom learning is expected not to stop at mastering facts and procedures, but to encourage students to understand meaning, connect concepts, solve contextual problems, and reflect on their way of thinking, (Koskinen, 2022; Polman et al., 2021)**.**

On the other hand, the results of initial discussions with several teachers and principals in Parepare City indicated that: 1) The teaching modules used by elementary school teachers still tend to be oriented towards routine exercises and low-level questions. 2) The designed learning activities do not provide much space for students to ask questions, explain reasons, discuss, and reflect on their thinking processes. 3) Teachers felt the need for guidance in translating the concepts of deep learning and HOTS into the structure of the Independent Curriculum teaching modules (CP, TP, learning objectives, assessments, activity steps, and LKPD).

This situation indicates a gap between the demands of curriculum policy and teachers' practical readiness in the field, particularly in developing teaching modules that effectively support in-depth classroom learning. Universities, particularly the Mathematics Education Study Program at Muhammadiyah University of Parepare, have a strategic role to play as school partners in strengthening teacher capacity through structured, sustainable, and contextualized community service programs tailored to school needs.

Based on this description, it is deemed necessary to implement a community service program in the form of HOTS-Oriented In-Depth Learning Module Development Training for Elementary School Teachers in Parepare City. This program is expected to serve as a vehicle for lecturer-teacher collaboration to produce more meaningful teaching modules for students while simultaneously improving teachers' professional competence.

Based on the background above, the problem formulation in this community service activity is: 1) How to improve the understanding of elementary school teachers in Pare-pare City regarding the concept of deep learning and HOTS in the context of the Independent Curriculum? 2) How to facilitate elementary school teachers to develop teaching modules that integrate deep learning and

HOTS operationally in classroom learning activities? 3) How to produce HOTS-oriented deep learning teaching modules that are ready to be tested in the classroom as an output of the community service program?

The general objective of this community service activity is to improve the competence of elementary school teachers in Parepare City in developing HOTS-oriented in-depth learning teaching modules that are aligned with the Independent Curriculum. The specific objectives are: 1) Improving teachers' understanding of the concept of deep learning, HOTS, and its implementation in learning in elementary schools. 2) Training teachers in developing teaching module components (CP, TP, learning objectives, assessments, learning steps, LKPD) that encourage in-depth learning and HOTS. 3) Producing a collection of HOTS-oriented in-depth learning teaching modules for several themes/materials in elementary schools that are ready to be tested and can be examples of good practices in partner schools.

Benefits of these activities: 1) For teachers: (a) Improve conceptual understanding and practical skills in designing HOTS-oriented in-depth learning teaching modules. (b) Have examples of ready-to-use teaching modules that can be adapted for other subjects and classes. 2) For students: (a) Gain a more meaningful, contextual, and cognitively challenging learning experience. (b) Get used to thinking critically, expressing reasons, and reflecting on the learning process from an early age. 3) For partner schools: (a) Have a collection of teaching modules as a model for developing teaching tools for the Independent Curriculum at the elementary level. (b) Strengthen the culture of collaboration and professional learning of teachers. 4) For universities: (a) Strengthen the role of Muhammadiyah University of Parepare as a strategic partner of schools in teacher professional development. (b) Produce scientific outputs of community service in the form of articles that can be published in journals or proceedings.

2. METHOD

Time and Duration of Activities

This community service activity is planned to last for 3 months (September-November 2025) with the following stages: (1) September 2025, Needs survey, partner coordination, and preparation of training materials. (2) October 2025, Training on developing HOTS-oriented in-depth learning modules. (3) November 2025, Assistance with the implementation of teaching modules in the classroom, monitoring and evaluation, reflection on implementation results, documentation, and publication.

Location and Venue

All activities will be held at the training locations: the Pare-pare City Education Office Hall and partner school classrooms. Implementation Locations: Partner schools (State Elementary School 5 in Ujung District, State Elementary School 10 in West Bacukiki District, State Elementary School 1 in Bacukiki District, and State Elementary School 27 in Soreang District, Parepare City).

Number of Beneficiaries

The direct beneficiaries of this activity are 20 elementary school teachers, consisting of five teachers from each cluster, with a total of four clusters located in each sub-district in Parepare City, as the main partners. Approximately 100 students are indirect beneficiaries through the transformed learning.

Techniques and Procedures

The method and approach used is Participatory Action Research (PAR), (Malik et al., 2025) with stages as in Table 1:

Table 1 Stages of PKM activities

Stages	Technical/Procedural
Needs Survey	Questionnaires and Focus Group Discussions (FGD) to map teachers' initial competencies
Training	Active learning through problem-based andragogy (Problem-Based Learning/PBL) approach
Implementation Assistance	Class supervision, clinical coaching, critical reflection-based mentoring
Evaluation and Reflection	Learning observation, in-depth interviews, analysis of module implementation results

Data collection techniques include: (1) Non-participatory observation during module implementation. (2) Semi-structured interviews with teachers. (3) Assessment of the developed teaching module documents. (4) Reflection questionnaire after implementation.

Method Justification

The Participatory Action Research (PAR) method was chosen because it is effective in empowering the teacher community, (Malik et al., 2025). This method involves them as the main actors of change, not just objects of training, (Baum, F., MacDougall, C., & Smith, 2020; Vaughn & Jacquez, 2020). In addition, the andragogy-based workshop approach is in line with the principles of

adult education, where participants learn from their experiences and actual problems they face, (Knowles et al., 2020).

Method Adjustments/Modifications

The PAR method, which typically focuses on community-based social change, is modified in this program to focus on teacher professional empowerment in developing HOTS-oriented in-depth learning competencies. Coaching and mentoring techniques are integrated to ensure a reflective process and change in teaching practices. The Problem-Based Learning (PBL) model is combined in the training to stimulate analysis of real-life educational problems in the classroom. These modifications are made to address the challenges of implementing educational innovations, which often fail due to weak internalization at the practitioner level.

3. RESULT AND DISCUSSION

The initial activity was training, followed by pedagogical mentoring using the Problem-Based Learning (PBL) model. Sample documentation of these activities is as follows:

Figure-1. Document of monitored classroom learning activities

3.1 Results

Furthermore, to measure the competency improvement of elementary school teachers in Parepare City in developing HOTS-oriented in-depth learning modules aligned with the Independent Curriculum, three achievement indicators were measured: 1) Understanding of deep learning and HOTS concepts. 2) Skills in Developing Deep Learning and HOTS-Oriented Module Components. 3) Product Quality of HOTS-Oriented In-Depth Learning Modules.

Data from four teachers tested prior to the PKM implementation were analyzed, yielding the results shown in Table 3.1 below.

Table 1. Scores of Four Teachers per Aspect before the Community Service (Activity Scale 1–4)

Teacher	Aspect 1: Understanding Deep Learning & HOTS	Aspect 2: Skills in Compiling Module Components	Aspect 3: Quality of Teaching Module Products
	Pretest	**Pretest**	**Pretest**
T1	2,0	1,8	2,0
T2	2,3	2,0	2.1
T3	2,1	1,9	20
T4	2,4	2,2	2.3

Meanwhile, data from four teachers tested after the Community Service implementation and analyzed yielded the results shown in Table 2 below.

Table 2. Scores of 4 Teachers per Aspect After Community Service (Scale 1–4)

Teacher	Aspect 1: Understanding Deep Learning & HOTS	Aspect 2: Skills in Compiling Module Components	Aspect 3: Quality of Teaching Module Products
	Posttest	**Posttest**	**Posttest**
T1	3.5	3.4	3.6
T2	3.6	3.5	3.5
T3	3.4	3.3	3.4
T4	3.7	3,6	3.7

Brief interpretation:

- Before PKM, the average teacher score was in the range of 2.0–2.4 (fair category).
- After PKM, the score increased to the range of 3.3–3.7 (good–very good category).

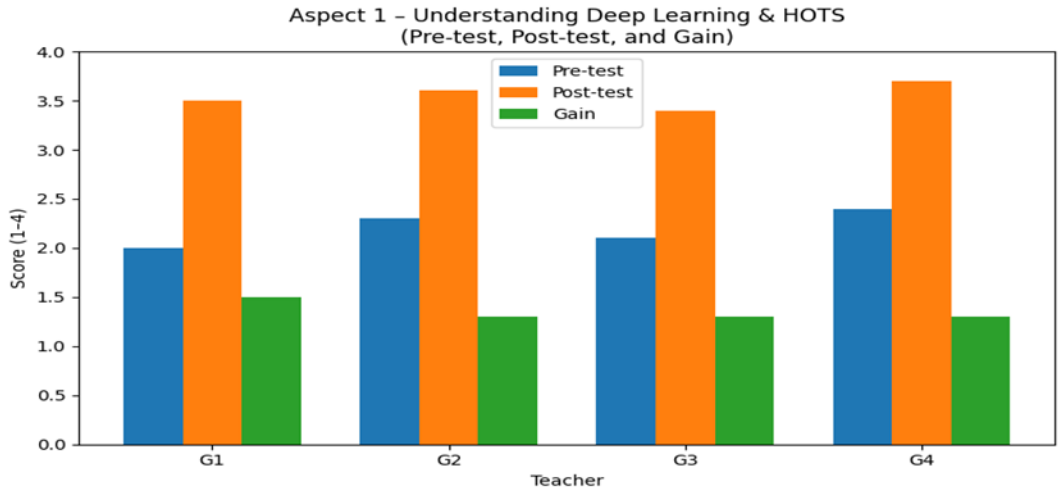

Figure 2. Aspect 1

The first graph depicts a comparison of pretest, posttest, and gain scores for the understanding of deep learning and HOTS concepts in four teachers (T1–T4). The average pretest score for the four teachers was around 2.20 (sufficient category). After the implementation of the community service program, the average posttest score increased to around 3.55 (good–nearly excellent category). The average gain reached approximately 1.35 points, or around 61% increase compared to the initial condition. Visually, the graph shows that for each teacher (T1, T2, T3, T4), the posttest bar is always higher than the pretest bar, and the gain bar shows a relatively consistent increase. This indicates that all teachers experienced an increase in understanding of: the difference between surface learning and deep learning, the definition and levels of HOTS (C4–C6: analyzing, evaluating, creating), and examples of HOTS applications in elementary school learning. Thus, the aspect 1 graph supports the conclusion that Specific Objective 1 (improving teachers' understanding of deep learning and HOTS concepts) was achieved well.

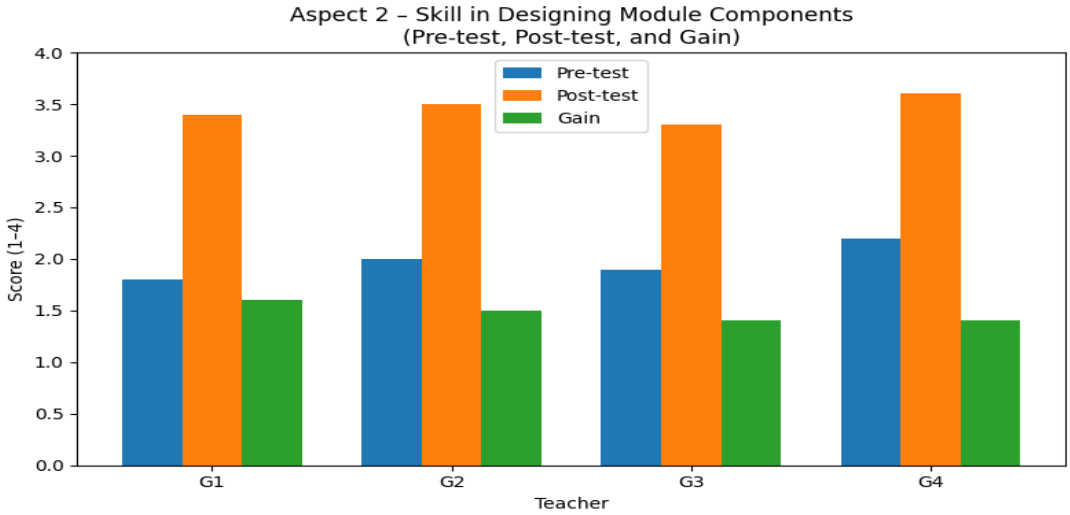

Figure 3. Aspect 2

The second graph shows the pretest, posttest, and gain scores for the skill aspect of developing HOTS-oriented in-depth learning module components. The average teacher pre-test score was approximately 1.97 (still at the lower limit of the sufficient category). After Community Service, the average post-test score increased to approximately 3.45 (good category). The average gain was approximately 1.47 points, which is equivalent to an increase of approximately 75% from the initial score. In the graph, for each teacher, the posttest bar appears significantly higher than the pretest bar, and the gain bar shows a significant jump. This reflects that after participating in the module development workshop and clinic, teachers are better able to formulate CP, TP, and learning objectives aligned with HOTS, develop learning steps that include exploration, discussion, and reflection, and design assessments and LKPD that encourage critical thinking and problem-solving, not just routine exercises. The graph for aspect 2 clearly shows that teachers' technical skills in developing teaching modules have improved significantly, thus supporting the achievement of Specific Objective 2.

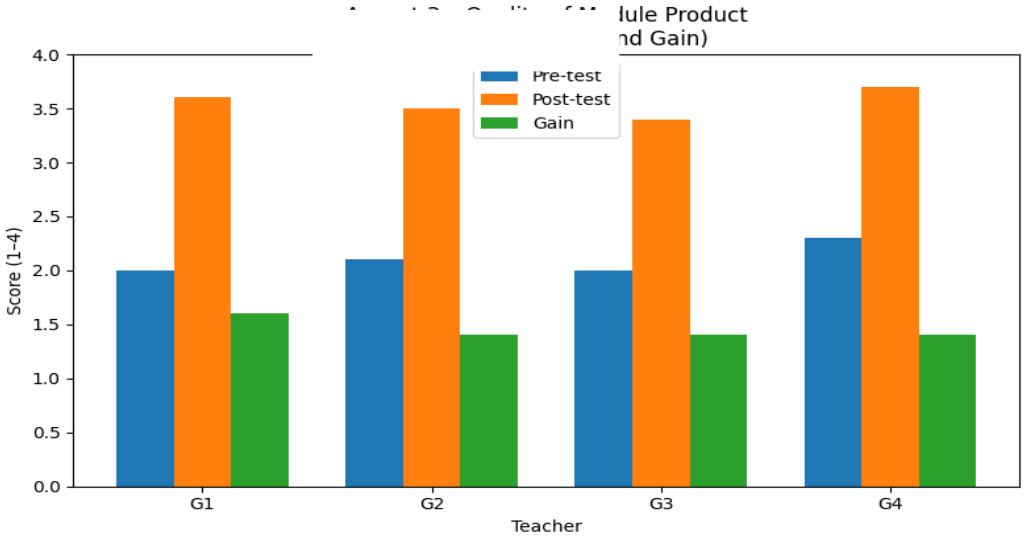

Figure 4. Aspect 3

The third graph displays the pretest, posttest, and gain for the quality aspect of the teaching module products produced by teachers. The average pretest score for the quality of the teaching module was around 2.10 (sufficient category). After the training, mentoring, and revision process, the average posttest score increased to around 3.55 (good–near excellent category). The average gain was around 1.45 points, or an increase of approximately 69% from the initial condition. Visually, the graph shows that the modules assessed after Community Service were of much higher quality than those before Community Service. This improvement is reflected in the stronger character of deep learning in the modules (meaning, conceptual connections, reflection), the clearer HOTS orientation

in activities and questions, the use of contexts close to the lives of elementary school students, and the alignment of assessments with learning objectives and activities, including the use of simple rubrics. Therefore, this aspect 3 graph confirms that the final product of the teaching module produced by teachers is in the good–very good category and is worthy of being tested as an example of good practice in partner schools, so that Specific Objective 3 can be declared achieved.

3.2 Discussion.

a. Understanding the Concept of Deep Learning and HOTS

The increase in the average score from approximately 2.20 (sufficient) to 3.55 (good or approaching excellent) indicates that this community service successfully strengthened teachers' conceptual foundations of deep learning and HOTS. Prior to the training, teachers tended to interpret HOTS as "difficult questions" and did not clearly differentiate between surface learning and deep learning. After a series of theory sessions, discussions, and concrete examples, teachers began to be able to explain the characteristics of deep learning (meaningful, connecting concepts, reflective) and relate them to the demands of the Independent Curriculum and the Pancasila Student Profile. This finding aligns with studies Fitrah et al. (2025) which shows that teachers' readiness to adopt deep learning pedagogy is greatly influenced by their understanding of 21st-century competencies and the demands of curriculum reform.

Another article asserts that deep learning pedagogy is relevant to support inclusive and meaningful education in the 21st century, but the main prerequisite is adequate conceptual understanding of teachers before entering the practical level, (Ikhsan & Setiawan, 2025). In the context of elementary school teachers, Hermita et al., (2025) showed that deep learning pedagogy training through STEM coding-based activities can improve elementary school teachers' readiness to implement learning that requires deep thinking and computational skills. On the other hand, research Kosasih et al., (2022) and Andriani et al., (2024) found that many teachers at the elementary and secondary levels still have a partial understanding of HOTS and have difficulty integrating it fully from planning, implementation, to evaluation. Thus, the increase in teachers' understanding scores in aspect 1 can be read as evidence that the community service design that combines theoretical reinforcement, concrete practical examples, and reflective discussions is in line with the recommendations of recent literature: improving conceptual competence is an important initial step before teachers are encouraged to design in-depth HOTS-oriented learning tools.

b. Skills in Compiling Deep Learning and HOTS-Oriented Teaching Module Components

In terms of module development skills, the average score increased from approximately 1.97 (adequate) to 3.45 (good). This indicates that after participating in the module development workshop and clinic, teachers not only understand the concepts but are also able to operationalize these concepts into Core Learning Objectives (CP), Core Learning Objectives (TP), learning objectives, activity steps, assessments, and Student Worksheets (LKPD) that are more aligned with the principles of deep learning and HOTS.

Research Mat et al., (2025b) The study on developing modules to improve HOTS emphasized that teachers need specific professional support in the form of training and mentoring in module development, as many teachers find it difficult to design activities and questions that truly encourage analysis, evaluation, and creativity. Studies Ramadhani et al., (2022) shows that the development of valid, practical, and effective STEM-based digital modules can strengthen the abilities of prospective elementary school teachers in designing activities that develop HOTS, and the N-gain results obtained show a significant positive impact on improving higher-order thinking skills. In line with that, Nurhayati & Setiawan, (2022) found that the use of HOTS-based e-modules helped prospective teacher students practice designing and working on assignments that require higher-order thinking skills more systematically. Winarti et al., (2024) shows that HOTS-based teaching materials development training makes teachers more enthusiastic and skilled at developing teaching materials that not only include content but also structure high-level thinking activities. In the context of the Independent Curriculum and Elementary Schools. Arfin et al., (2025) emphasized that the implementation of HOTS-based learning tools in elementary schools needs to be supported by collaborative learning planning, the use of appropriate learning models, and assessment tools that align with HOTS characteristics. The results of this community service are shown by the increase in teachers' scores on the ability to compile teaching module components, confirming that clinical mentoring, sample module templates, and gradual revisions are effective strategies for operationalizing these demands in the field.

c. Product Quality of HOTS-Oriented In-Depth Learning Teaching Modules

In terms of module product quality, the average score increased from around 2.10 (sufficient) to 3.55 (good–approaching excellent). Qualitatively, the modules produced after community service showed: a) more contextual and reasoning-demanding student activities, b) the presence of open-ended questions and assignments that encourage analysis, evaluation, and creativity, and c) assessments that are more aligned with learning objectives and HOTS activities. Adelia et al., (2024) who analyzed the implementation of the Independent Curriculum in pilot Islamic elementary schools

found that the quality of curriculum implementation was largely determined by the coherence between learning planning, classroom implementation, and assessment planning.

Next literature review Pratiwi et al., (2024) The implementation of K13 and the Independent Curriculum in elementary education also emphasizes that the Independent Curriculum requires teachers to design more flexible, differentiated, and Pancasila-oriented learning experiences through more meaningful projects and assessments. Shalikhah & Nugroho, (2023) shows that the implementation of HOTS in elementary schools can be facilitated through various learning models that stimulate, train, and develop high-level thinking skills, as long as the tools used by teachers are consciously designed for that purpose Arfin et al., (2025) He added that developing HOTS-based learning tools within the Independent Curriculum framework requires integrating collaborative activities, problem-based assignments, and authentic assessments to truly impact students' thinking.

Internationally, the HOTS training module for elementary school teachers developed under the TALEEM program in Punjab also demonstrated that when teachers received explicit modules and guidance on HOTS learning and assessment, the quality of their classroom practice significantly improved. This reinforces the interpretation that the improvement in the quality of teacher modules in this PKM is not coincidental, but in line with global research trends: structured guidance in developing HOTS-based modules or teaching tools contributes directly to improvements in the quality of teaching tools and practices. Therefore, the improvement in module quality scores in this PKM can be interpreted as an indicator that teachers are beginning to be able to translate the principles of the Independent Curriculum, in-depth learning, and HOTS into concrete products in the form of teaching modules that have the potential to become good practices in partner schools.

4. CONCLUSION

Based on the results of the implementation of the Community Service Program entitled Strengthening Elementary School Teacher Competence in compiling HOTS-oriented in-depth learning teaching modules that are aligned with the Independent Curriculum in Parepare City, it can be concluded that: Teachers' conceptual competence in deep learning and HOTS has significantly improved. Pretest–posttest results for four sample teachers showed an increase in average conceptual understanding scores from approximately 2.20 (fair) to 3.55 (good–near excellent). Teachers no longer viewed HOTS as merely "difficult" questions, but began to understand the difference between surface learning and deep learning. They were able to explain HOTS at the C4–C6 levels and provide examples of HOTS activities relevant to the context of elementary school learning.

Teachers' skills in developing in-depth learning and HOTS-oriented teaching modules have significantly improved. The average score for the module development skill aspect increased from

approximately 1.97 (adequate) to 3.45 (good). Teachers are able to formulate more specific CP, TP, and learning objectives aligned with HOTS, develop learning flows that include exploration, discussion, presentation, and reflection, and design assessments and worksheets that encourage critical thinking and problem-solving.

The quality of the HOTS-oriented in-depth learning teaching modules produced by teachers is in the good–very good category. Assessment of the quality of the teaching modules using rubrics 1–4 showed an increase in the average score from approximately 2.10 (sufficient) to 3.55 (good–nearly very good). The post-PKM teaching modules display in-depth learning characteristics (meaningful, contextual, connecting concepts, and reflective), HOTS-oriented activities and questions, and assessments that are more authentic and aligned with the learning objectives of the Independent Curriculum.

Community Service Program significantly contributes to achieving the program's overall objectives. integratedly, improvements in conceptual understanding, module development skills, and the quality of the teaching module products demonstrate that the overall objective of Community Service, namely improving the competency of elementary school teachers in Parepare City in developing HOTS-oriented in-depth learning teaching modules aligned with the Merdeka Curriculum, has been achieved among target teachers in partner schools. The resulting modules have the potential to become examples of good practices that can be replicated and disseminated to other schools.

Sugestion

Based on the results and findings of the PKM, several suggestions can be put forward:

1. Continuous strengthening through Teacher Learning Groups (KKG)/teacher learning communities. It is recommended that schools and KKGs in each sub-district (Soreang, Ujung, Bacukiki, and West Bacukiki) make the development of HOTS-oriented in-depth learning teaching modules a regular agenda. Teachers who have participated in the Community Service Program can serve as core teachers/local resource persons to mentor their colleagues in other schools.
2. Continued mentoring through classroom implementation and reflection. Subsequent PKM should not stop at module development, but should continue with mentoring for classroom implementation (lesson study/microteaching in real classrooms), followed by joint reflection based on student learning outcome data. This will strengthen the link between the documents (modules) and actual classroom learning practices.
3. Development of a bank of deep learning and HOTS-based teaching modules and student worksheets (LKPD). The teaching modules resulting from the PKM can be compiled into a bank

of teaching modules or e-books accessible to teachers in Parepare City. The Department of Education and partner schools can facilitate the storage and sharing of documents (for example via Google Drive, school websites, or learning platforms) so that the modules become a shared learning resource. Integration with literacy and numeracy improvement programs. Considering that the Independent Curriculum emphasizes strengthening literacy, numeracy and the Pancasila Student Profile, the teaching modules being developed need to continue to be refined so that they explicitly: integrate meaningful literacy and numeracy activities, and link HOTS activities with the dimensions of the Pancasila Student Profile. Expanding the target audience and conducting follow-up research. In the future, this PKM can be expanded to more schools and even across sub-districts, involving more teachers as participants.

4. Integration with literacy and numeracy improvement programs. Given that the Independent Curriculum emphasizes strengthening literacy, numeracy, and the Pancasila Student Profile, the developed teaching modules need to be continuously refined to explicitly integrate meaningful literacy and numeracy activities and link HOTS activities to the dimensions of the Pancasila

REFERENCES

Andriani, R., Safriana, S., Winata, I. W., & Ameliah, I. (2024). *The Understanding Of Higher-Order Thinking Skills (Hots) Among Middle School Science Teachers in Lhokseumawe , Indonesia*. *00017*, 1–11.

Baum, F., MacDougall, C., & Smith, D. (2020). Participatory action research. Methodology. *International Journal of Social Research*, *23*(3), 289–303. https://doi.org/10.1080/13645579.2019.1669925

Fitrah, M., Sofroniou, A., Yarmanetti, N., Ismail, I. H., Anggraini, H., Nissa, I. C., Widyaningrum, B., Khotijah, I., Kurniawan, P. D., & Setiawan, D. (2025). *Are Teachers Ready to Adopt Deep Learning Pedagogy ? The Role of Technology and 21st-Century Competencies Amid Educational Policy Reform*. 1–19.

Herlinawati, H., Marwa, M., Ismail, N., Liza, O., David, D., & Situmorang, B. (2024). Heliyon The integration of 21st century skills in the curriculum of education. *Heliyon*, *10*(15), e35148. https://doi.org/10.1016/j.heliyon.2024.e35148

Hermita, N., Gusmida, R., Barokah, S., & Putra, M. J. A. (2025). Deep Learning Pedagogy through STEM Coding for Elementary Teachers : Strengthening Computational Thinking and Curriculum Implementation Readiness. *Kreasi: Jurnal Inovasi Dan Pengabdian Kepada Masyarakat*, *5*(3), 868–886.

Ikhsan, R. N., & Setiawan, A. (2025). *Deep Learning : Adaptive Solutions Towards Inclusive 21st Century Education*. *14*(3), 916–930.

Kamil, D., Aswad, M., & Hidayat, M. (2024). *Are They on Target ? The Order of Thinking Skills of the Reading Comprehension Questions and Tasks of the Merdeka Curriculum English Textbook for Indonesian High School*. *8*(2), 526–540.

Knowles, M., III, E., Swanson, R., & Robinson, P. (2020). *The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development*.

https://doi.org/10.4324/9780429299612

Kosasih, A., Supriyadi, T., Firmansyah, M. I., & Rahminawati, N. (2022). Higher-Order Thinking Skills in Primary School: Teachers' Perceptions of Islamic Education. *Journal of Ethnic and Cultural Studies*, *9*(1), 56–76. https://doi.org/10.29333/ejecs/994

Koskinen, R. (2022). *Meaningful Learning in Mathematics : A Research Synthesis of Teaching Approaches*. *17*(2).

Malik, M. A., Mas, B., Setiawati, H., & Jafar, J. (2025). *DESIGNING DEEP LEARNING TEACHING MODULES WITH AI : LEARNING FORMATION TOWARDS QUALITY EDUCATION FOR ALL*. *3*(7).

Mat, H., Nusantara, T., Atmoko, A., Hanafi, Y., & Mustakim, S. S. (2025). *Need analysis : development of a teaching module for enhancing higher-order thinking skills of primary school students*. *14*(3), 1643–1650. https://doi.org/10.11591/ijere.v14i3.30335

Polman, J., Hornstra, L., & Volman, M. (2021). The meaning of meaningful learning in mathematics in upper ‐ primary education. *Learning Environments Research*, *24*(3), 469–486. https://doi.org/10.1007/s10984-020-09337-8

Rachman, A., Yulius, H., Putro, S., Rusandi, M. A., David, D., & Situmorang, B. (2024). Heliyon The development and validation of the " Kuesioner Tema Proyek Penguatan Profil Pelajar Pancasila " (KT P5): A new tool for strengthening the Pancasila Student Profile in Indonesian pioneer schools. *Heliyon*, *10*(16), e35912. https://doi.org/10.1016/j.heliyon.2024.e35912

Thornhill-miller, B., Camarda, A., Mercier, M., Burkhardt, J., Morisseau, T., Bourgeois-bougrine, S., Vinchon, F., Hayek, S. El, Augereau-landais, M., Mourey, F., Feybesse, C., Sundquist, D., & Lubart, T. (2025). *Creativity , Critical Thinking , Communication , and Collaboration : Assessment , Certification , and Promotion of 21st Century Skills for the Future of Work and Education*.

Vaughn, L. M., & Jacquez, F. (2020). Participatory research methods–choice points in the research process. *Journal of Participatory Research Methods*, *1*(1).