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DEVELOPING MATHEMATICS TEACHING MATERIALS BASED ON NUMERACY LITERACY FOR JUNIOR HIGH SCHOOL MATHEMATICS TEACHERS IN WEST BANDUNG REGENCY

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Abstrak: Pemahaman guru matematika terhadap literasi dan numerasi yang baik akan berdampak pada kemampuan mereka dalam mengembangkan bahan ajar yang pada akhirnya akan meningkatkan literasi numerasi siswa. Pengabdian kepada masyarakat ini bertujuan untuk menguatkan pemahaman literasi numerasi guru matematika sehingga mereka memiliki kemampuan dalam mengembangkan bahan ajar yang mengintegrasikan literasi numerasi dalam proses pembelajaran matematika. Kegiatan pengabdian ini didesain dalam tiga tahap, yaitu seminar, lokakarya, dan ujicoba hasil lokakarya. Kegiatan tahap pertama dilakukan melalui seminar secara daring dengan dengan pendekatan PAR (*Participatory Action Research*). Partisipan kegiatan ini adalah 172 guru matematika SMP negeri dan swasta di Bandung Barat. Kegiatan tahap kedua adalah lokakarya pengembangan perangkat pembelajaran terintegrasi literasi numerasi dimana peserta dibagi menjadi beberapa kelompok berdasarkan topik matematika yang ada di sekolah menengah pertama. Produk hasil lokakarya pada tahap kedua ini adalah modul ajar, bahan tayang, bahan ajar, dan bahan ajar tersimpan dalam aplikasi *Kotobee.* Tahap ketiga adalah implementasi praktek pembelajaran sebagai uji coba produk yang dihasilkan pada tahap dua. Praktek pembelajaran dilakukan secara terbuka di SMP N 3 Lembang Kabupaten Bandung Barat. Hasil program pengabdian kepada masyarakat ini menunjukkan adanya peningkatan kemampuan literasi numerasi guru matematika SMP di Kabupaten Bandung Barat. Secara umum peserta mampu menghasilkan produk bahan ajar matematika yang terintegrasi literasi numerasi dan disimpan pada salah satu aplikasi yang Bernama *Kotobee*.

Kata Kunci: bahan ajar matematika terintegrasi, guru matematika, literasi numerasi, pengajaran matematika

Abstract: Mathematics teachers' understanding of literacy and numeracy impacts their ability to develop teaching materials to improve students' numeracy literacy. This community service program aims to strengthen mathematics teachers' understanding of numeracy literacy to develop teaching materials that integrate numeracy literacy into the mathematics learning process. This program was designed in three stages: seminars, workshops, and pilot testing of workshop results. The first phase of the activity was conducted through an online seminar using the PAR (Participatory Action Research) approach. The participants were 172 public and private junior high school mathematics teachers in West Bandung Regency. The second phase of the activity was a numeracy literacy integrated learning tool development workshop where participants were divided into groups based on mathematics topics. The workshop's products in this second stage are teaching modules, broadcast materials, and teaching materials stored in the Kotobee application. The third stage was the implementation of learning practices as a trial of the products produced in stage two. The learning practice was conducted openly at SMP N 3 Lembang, West Bandung Regency. The results of this community service program showed an increase in the numeracy literacy skills of junior high school mathematics teachers in West Bandung Regency. In general, participants could produce mathematics teaching material products that were integrated with numeracy literacy and stored in one application called Kotobee.

Keywords: integrated mathematics teaching materials, mathematics teachers, numeracy literacy, mathematics teaching

Introduction

Numeracy literacy competence is a basic human need for life. For example, if a child wants a toy with a price of Rp 50.000, then to get it, he sets aside his allowance of Rp 2.000 per day. How long does it take to save up enough money to buy the toy? This illustration requires numeracy literacy, one of the fundamental competencies in the current industrial era 5.0 (Kemdikbud, 2017). Numeracy literacy is the knowledge and skills to use various numbers and symbols related to basic mathematics to solve practical problems in a variety of daily life contexts, as well as being able to analyze information displayed in various forms (graphs, tables, charts, etc.) and then use the interpretation of the results of the analysis to predict and make decisions (Kemdikbud, 2017). Meanwhile, mathematical literacy is a comprehensive mathematical ability involving the ability to formulate, apply, and interpret mathematics in various contexts, reason, and connect mathematics to everyday life (OECD, 2023). From this perspective, it can be seen that numeracy literacy and mathematical literacy are similar in that both require a foundation of mathematical knowledge. The difference lies in the use of mathematical knowledge. Numeracy literacy only uses basic mathematical knowledge, whereas mathematical literacy uses comprehensive mathematical skills.

The Ministry of Education and Culture proclaimed that Indonesia must develop a literacy culture as a prerequisite for 21st-century life skills through integrated education, starting from family and school to society (Kemdikbud, 2017). Integrating numeracy in school education includes reading, numeracy, counting literacy, science and technology (digital), financial, cultural, and civic literacy (Kemdikbud, 2017). Therefore, Kemdikbud has launched the National Literacy Movement Roadmap in order to prepare a literate generation to face the challenges of the 21st century (Kemdikbud, 2021). This program was triggered by the low achievement of survey results related to literacy, for example, the results of PISA (Program for International Student Assessment), which has been conducted since 1997 (OECD, 2023).

The results of the PISA survey in 2020 showed that although in order the average score of Indonesian students in reading, science, and mathematics literacy increased, the average score decreased and still remained below the average score of literacy in reading, mathematics, and science (OECD, 2023). These results are similar to the results of previous studies (Winata, et al., 2021; Widiantari, et al., 2022) which found that students' reading and numeracy literacy skills are still not optimally developed. This fact is due to students completing the assignments by looking at references on the internet and not understanding the textbook references recommended by the teacher. In addition, when students face math problems, they do not try to solve them according to their understanding.

Selan, Daniel, & Babys (2020) stated only a small proportion of students could achieve the indicators in literacy that they measured. Specifically, in the West Bandung district, students are not familiar with literacy questions (Nuurjannah, Amalia & Fitria, 2018), so students' achievements in literacy are less than third level. This finding was supported by the results of an audience with the Musyawarah Guru Mata Pelajaran (MGMP) of Junior High School (SMP) Sub Rayon 02 West Bandung Regency that the integration of numeracy literacy still faced

obstacles due to the lack of teacher understanding of numeracy literacy, as well as how to integrate numeracy literacy in mathematics learning.

The facts of the PISA results, several studies, and community access to education make it challenging to create a literacy movement. The challenge of integrating literacy in the practice of education in schools is not merely the responsibility of teachers and education administrators in schools but also requires the active role of stakeholders in the field of education, especially the Mathematics Education Study Program, Faculty of Mathematics Education and Natural Sciences (FPMIPA), Universitas Pendidikan Indonesia (UPI) which has partnered with MGMP Mathematics SMP Sub Rayon 02 West Bandung Regency. In addition to providing benefits for improving the quality of education, lecturers as researchers can also obtain study materials for the development of problem-based and case method-based lecture practices, for example, Mathematics Education Curriculum Studies, Theoretical and Practical Studies of Mathematics Learning Processes and Outcomes, Pedagogical Studies, and Didactical Studies.

The efforts of the Mathematics Education Study Program of FPMIPA UPI in improving numeracy literacy were carried out with training activities to improve the competence of mathematics teachers, especially numeracy literacy, and its integration into teaching and learning activities. Strengthening teacher competence in integrating numeracy literacy in learning needs to be done in the form of activities integrated with teacher duties. Teachers can still carry out their teaching duties, but can also participate in activities to improve their competence. Under these conditions, the strategy chosen in the implementation of this service is training with an in-on-in pattern.

The in-on-in training pattern combines in-service training and on-the-job learning (Zulyetti, 2014). The first in-service training is designed to increase the competence of trainees for one day. In this community service program, a seminar format was chosen to increase teachers' understanding of numeracy literacy. Meanwhile, in the on-the-job learning phase, teachers learn to develop teaching materials through direct practice guided by experts in the field of mathematics education. In the second in-service training phase, participants learn from observing model teachers during learning practices. Therefore, the in-on-in pattern equips teachers theoretically with numeracy literacy and provides opportunities for teachers to develop numeracy-integrated mathematics teaching materials. Participants can also learn from the model teacher during the learning practice.

The in-on-in pattern had also been practiced in several previous educational programs and had a positive effect. The application of the in-on-in training model can improve the competence of teachers in conducting item validation with good categories at the senior high school level (Sarman, 2020), developing teaching materials for Pancasila and citizenship education (Komalasari et al., 2021), combining with lesson study (Durahman, 2021), and technical guidance for developing learning tools for PJOK teachers in Yogjakarta (Tumuruna, 2021). Due to the analysis of the problem situation in this community service program based on the results of PISA literacy with the research subject was children aged up to 15 years, and strengthened by the results of an audience with MGMP Junior High School Rayon 02 West

District, the participants in the training were junior high school mathematics teachers in West Bandung Regency.

Based on the background mentioned previously, implementing community service with an in-on-in pattern for junior high school mathematics teachers in West Bandung Regency aims to improve mathematics teachers' competence in numeracy literacy to develop mathematics teaching materials integrated with numeracy literacy. Finally, this program can contribute to improving the quality of mathematics education.

Methods

This community service program was carried out in West Bandung Regency. The participants of this program were 172 junior high school mathematics teachers from public and private schools. This program was implemented using the blended learning method; namely, the first in-service training was carried out online, on-the-job learning was carried out face-to-face, and the second in-service training was carried out face-to-face. The flow of implementation of this program is illustrated in Diagram 1.

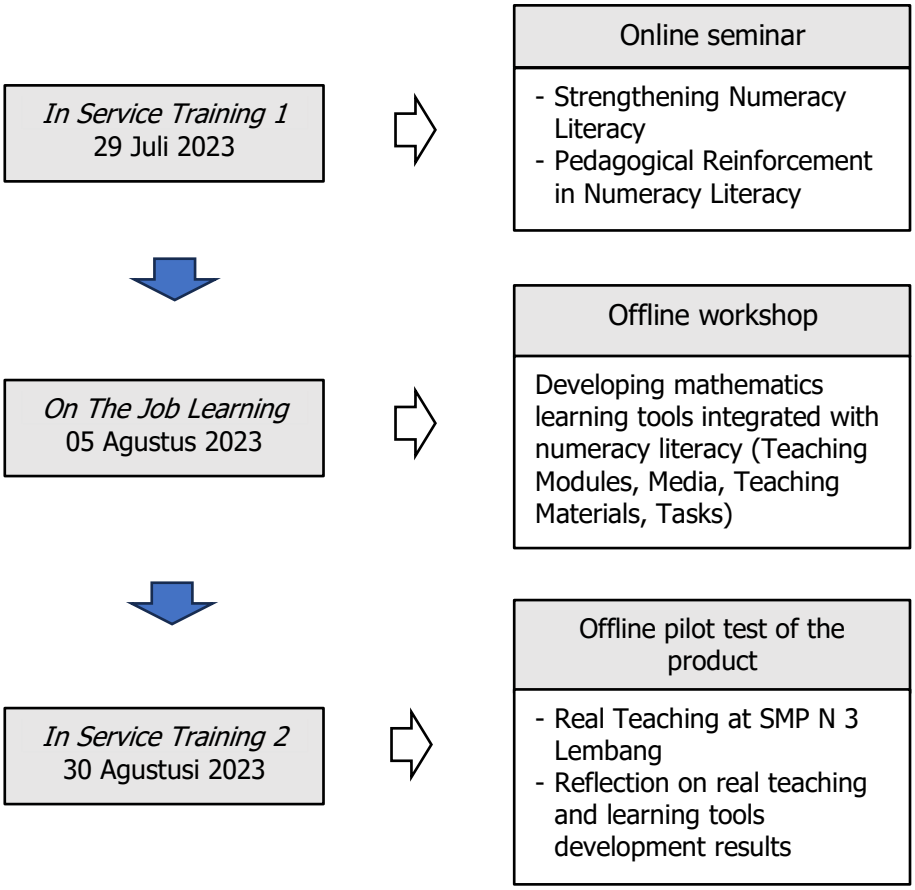


Diagram 1. The flow of implementation of the community service program

In the first stage, the seminar was conducted using the Participatory Action Research (PAR) approach. This approach is considered to be able to address the problems, meet the practical needs of the community, and produce knowledge through participatory community

learning (Afandi, 2020). At this stage, speakers consisting of two experts present the problem guided by a moderator, and then participants are given the opportunity to interact, ask questions, and discuss. The first material is the concept of literacy and its integration into mathematics learning to strengthen teacher numeracy literacy. The second material is strengthening the development of mathematics teaching materials integrated with numeracy literacy.

In the second stage, a workshop was organized to develop mathematics teaching materials integrated with numeracy literacy. This program was conducted face-to-face (offline) at SMP Negeri 2 Cipatat. The workshop aimed to improve mathematics teachers' ability to develop teaching materials integrated with numeracy literacy. The Community Service team assisted the development process, consisting of mathematics lecturers and students of the Postgraduate and Undergraduate Mathematics Education Programs at Universitas Pendidikan Indonesia, who have expertise in information and communication technology (ICT).

In the third stage, a pilot test was conducted on the products developed in the second stage (workshop). The product pilot test was conducted at SMP N 3 Lembang, West Bandung Regency. The model teacher involved in this pilot test was one of the teaching material development team. This stage ended with a review of teaching materials and overall program evaluation through a questionnaire containing participants' responses about service, responsiveness, and tangibles. This questionnaire was sent to the participants via Google Forms.

Results and Discussion

Numeracy literacy is a necessity of human life to solve problems that require mathematical thinking or even the use of formal mathematical knowledge, such as symbols, notations, or mathematical rules. Numeracy literacy is not explicitly taught in formal education. However, since this competency is essential for human life, numeracy literacy can be taught integratively in all subjects, especially mathematics.

In this community service program, an online seminar aims to increase the theoretical understanding of numeracy literacy and its application in everyday life. Theoretical numeracy literacy is the foundation for teachers to improve their understanding of the importance of numeracy literacy in learning and encourage them to integrate it into mathematics learning. Kemampuan ini bukan hanya untuk dirinya saja, tetapi juga untuk siswa yang menjadi peserta didiknya. This ability not only benefits the teacher but also the students. Numeracy literacy is the knowledge and skills in using various kinds of numbers and symbols related to basic mathematics, which are helpful for students' future in solving practical problems in everyday life (Patriana et al., 2021), as well as being a primary need for every human being to be able to fulfill their life needs (Dantes & Handayani, 2021). Therefore, literacy and numeracy are the minimum competencies or basic competencies that students need to be able to learn (Muliantara & Suarni, 2022). Implementation of the online numeracy literacy seminar as shown in Figure 1.

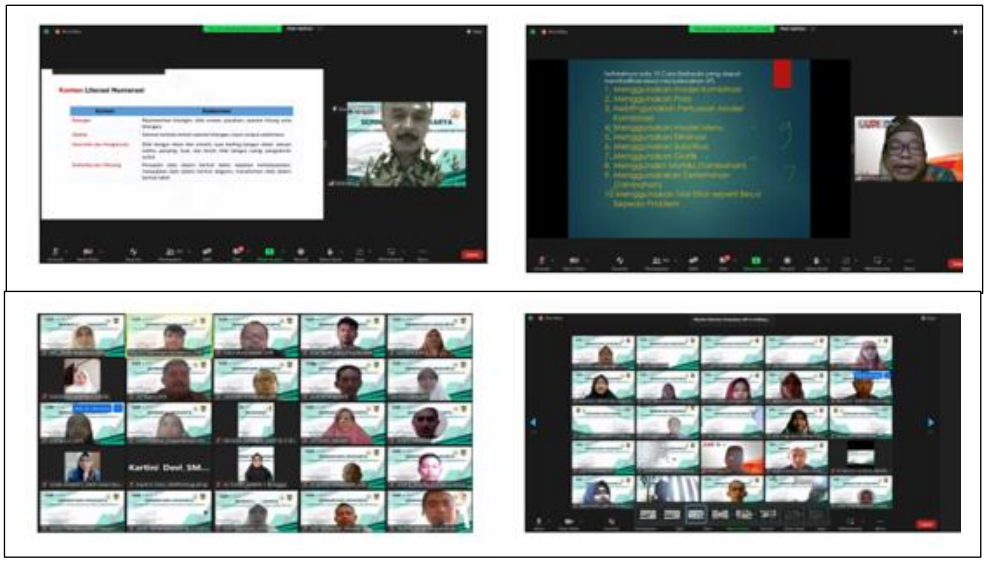


Figure 1. Online numeracy literacy seminar

The importance of teachers' understanding of integrating numeracy literacy in learning is one of the efforts to support the numeracy literacy movement promoted by Kemdikbud since 2021 (Kemdikbud, 2021). This literacy movement needs to be massively revived by providing access to reading and multimodal facilities through the support of technological devices to foster a reading culture, especially by increasing the literacy skills of school members in education units (Muliantara & Suarni, 2022). Therefore, in addition to gaining knowledge through seminars, the second phase of this community service program was held through a workshop on developing teaching materials that integrate numeracy literacy. The implementation of the workshop in this program is presented in Figure 2.

Figure 2. Workshop on Developing Teaching Materials for Numeracy Literacy Integration

The first step in developing teaching materials is brainstorming to select learning outcomes. The next step is the selection of contexts relevant to learning materials, tasks in teaching materials, selection of media used and learning assessments. These steps are important because the learning tools designed must be in accordance with the problems faced by teachers and students in the learning process. Planning is an essential stage in learning.

Teachers' decisions on various learning aspects affect students' opportunities to learn (Superfine, 2008). In this program, discussing teaching materials is a didactic-pedagogical anticipation step. Effective teachers understand that designing learning requires great effort (Kilpatrick et al., 2001). In addition, the teaching materials developed have the potential to encourage students to learn mathematics and use it in problem-solving activities in everyday life. This is in line with the purpose of learning mathematics, which develops an understanding of mathematical knowledge and seeks to develop mathematical thinking skills. Education is not merely a medium of knowledge transfer but also of developing students' critical thinking. The demands of education today are not only to create students who are competitive but also able to face future challenges and play an essential role in changing society towards a better future (Fauziah, 2022).

The teaching materials developed in this program are then stored in the Kotobee application as an independent learning resource for students. Kotobee was chosen because it can fully integrate PowerPoint and properly display animation. Various types of videos can be integrated into the learning materials stored in this application. In addition, if multiple-choice assessments are used, students will be able to see the results of their work immediately. This Kotobee application also helps improve the digital literacy of mathematics teachers because many teachers have not utilized ICT technology optimally and are less familiar with using computers (Amir et al., 2022). Thus, in addition to teachers being able to develop mathematics teaching materials integrated with numeracy literacy, they can improve their digital literacy. Examples of teaching materials that workshop participants have developed are shown in Figure 3. The product was then piloted at SMP 3 Lembang, West Bandung Regency. The documentation of the pilot test is shown in Figure 4. In this pilot test, the model teacher was a mathematics teacher at SMPN 1 Cipatat, West Bandung Regency.

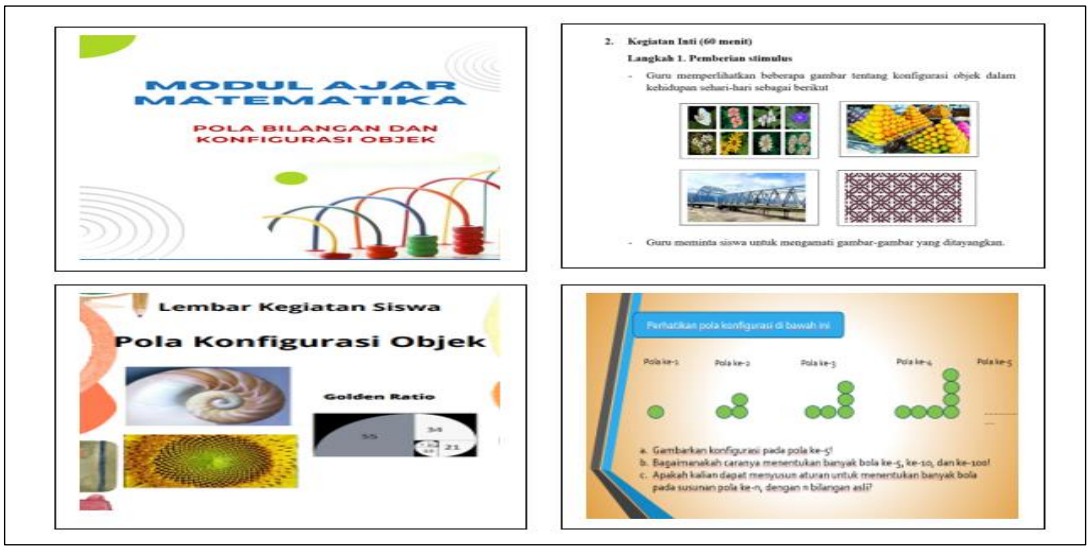


Figure 3. Examples of workshop products

Figure 4. Pilot testing of the developed product

Within 80 minutes of learning, students were asked to complete the task of finding rules or patterns from a configuration of objects in various ways. Through this way students can find the number of objects (balls) from a given configuration. Students' initial response to the task was that they did not immediately understand what was being asked. However, through scaffolding, some groups of students could find the arrangement of patterns from one particular perspective or point of view. The PowerPoint simulation with animation that displays the appearance of objects in each configuration pattern helps students find patterns. Scaffolding enables learners to receive assistance through new skills or beyond their abilities (Chairani, 2015). Through scaffolding, students begin to have ideas for doing the tasks given in the student worksheet. However, because the task demand is not just finding a single strategy when finding one solution strategy, students are not yet proficient in finding other strategies. This is strongly influenced by students' daily math learning habits, either during teaching and learning activities or solving problems from books. Students rarely or even never get open-ended tasks and problems. Open-ended tasks with integrated numeracy liteation need attention from teachers and book writers. This will encourage students to think creatively to find different mathematics strategies and meanings or values (Sofyan, 2021). Therefore, teachers must develop mathematics teaching materials integrated with numeracy literacy in the form of open-ended questions.

From the example of students' answers in Figure 5, the questions asked by students are appropriate and relevant to the context and can solve problems mathematically. This means that students can ask questions related to object configuration patterns that the teacher can use as discussion material for students. These results suggest that student worksheets integrated with numeracy literacy can facilitate the development of student's skills in using numbers and symbols related to basic mathematics, solving object configuration pattern problems in a daily life context, and developing strategies in reasoning independently.

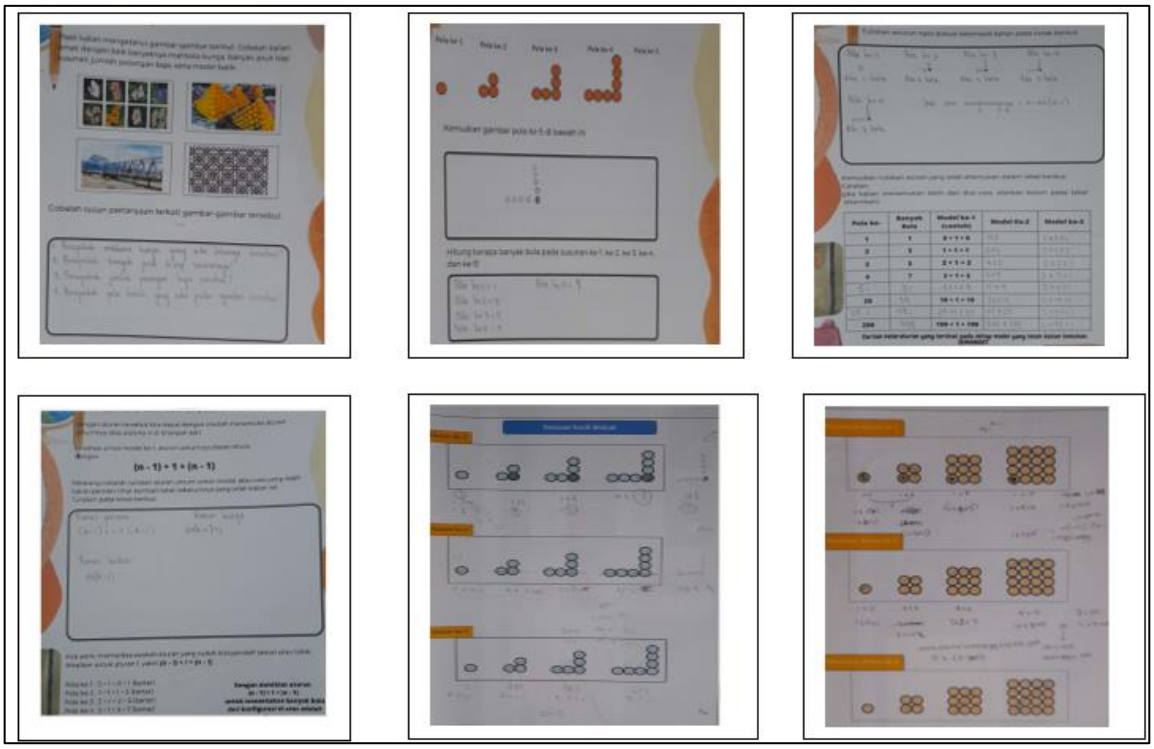
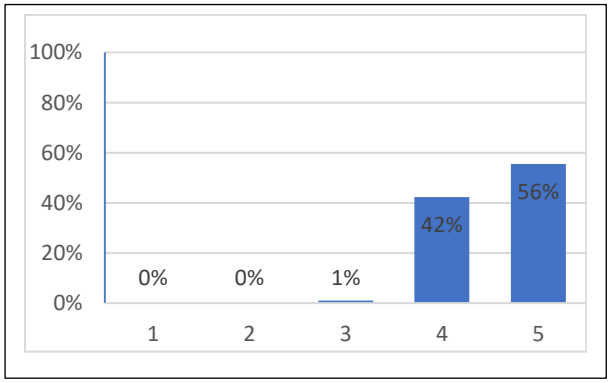


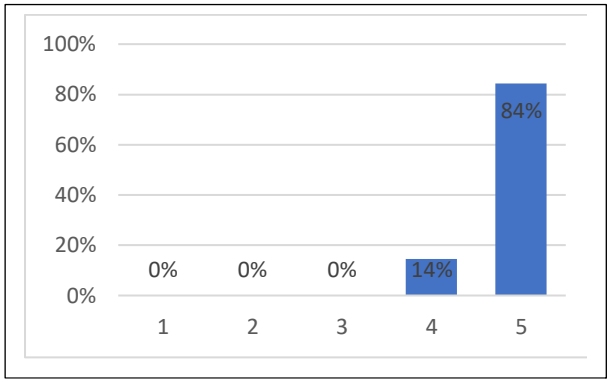
Figure 5. Examples of student work in the pilot test of teaching materials

To evaluate this community service program, participants were asked to fill out a questionnaire containing the participants' assessment of timeliness, speaker competence, theme suitability with program material, program benefits to the duties of mathematics teachers, and activity committee services. Participants showed a good response regarding the appropriateness of the implementation of this community service program. The program's implementation in the first stage was carried out according to schedule, while the implementation of the second stage had technical problems related to the late arrival of participants. However, participants expressed the opinion that the second phase was timely. The suggestions from relevant participants are considered to improve the program's implementation.

Committee services are also part of the success of the program implementation. Participants viewed that the committee provided excellent services during the program's implementation. Some suggestions from the participants related to the time of implementation of the activities are the addition of the duration of the program, the program should not be held on holidays, workshops should be held in more than one meeting, and additional time for the development and use of ICT. In general, the program's implementation ran well at all stages and per the plan that had been set. The participants' responses to the committee's services during this community service program are shown in Diagram 2. From the results shown in Diagram 2, participants responded with good and very good categories related to services during the program. Thus, the committee's services in implementing the program helped participants in this community service program.



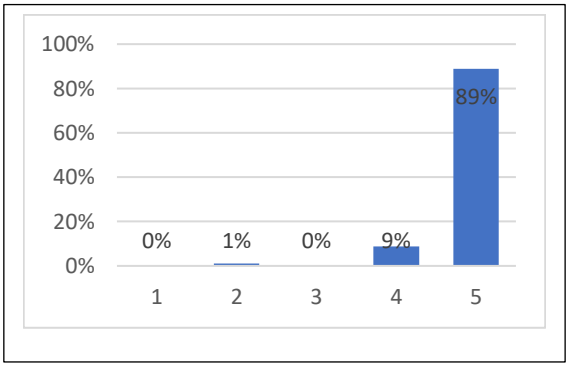
Timeliness of program implementation



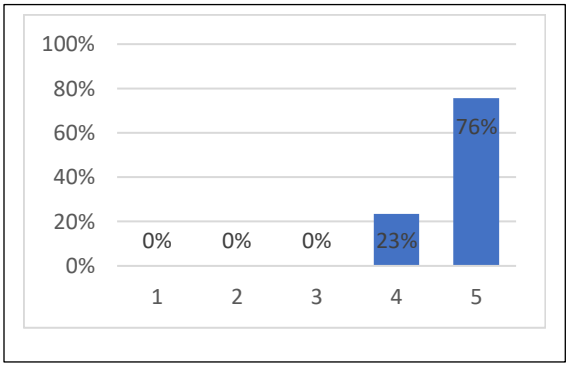
Committee service

Diagram 2. Participants' response regarding the committee's service

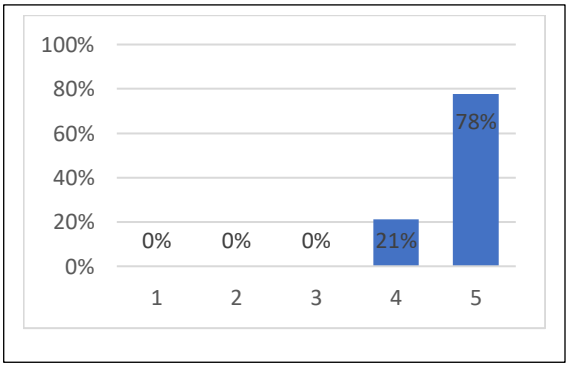
As described above, stage one of this community service program is an online (in) seminar that aimed to provide a general understanding of numeracy literacy related to mathematics and its integration in mathematics learning in accordance with the current curriculum. Participants' responses to the speakers related to competence, presentation, language use, and discipline were very good. In detail, the participants' responses to the speakers/experts can be seen in Diagram 3 below.



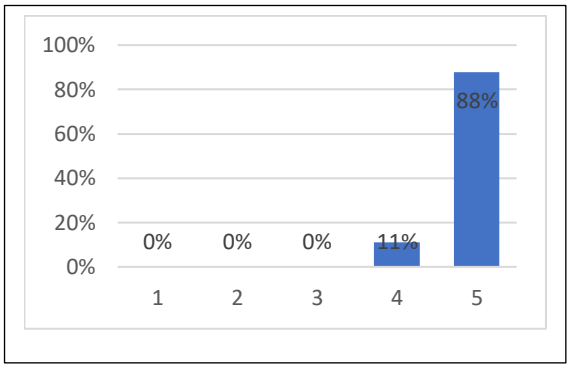
Speaker competency



Clarity of speaker's presentation



Speaker's use of language

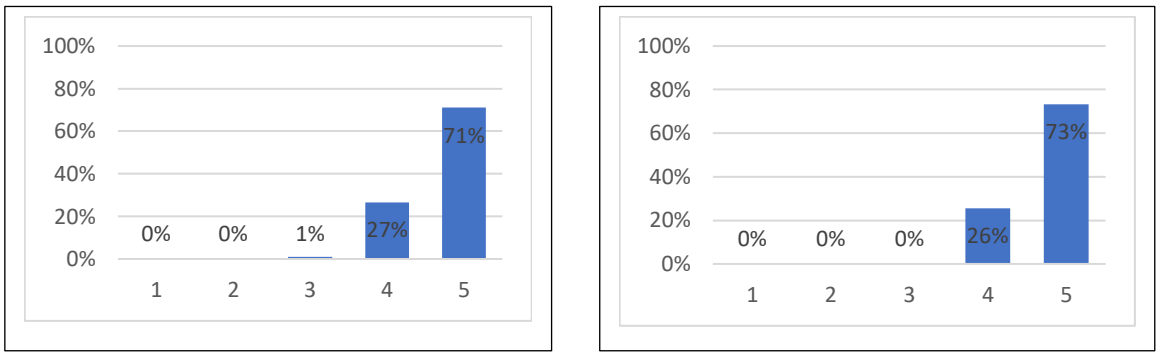


Discipline of the speaker

Diagram 3. Participants' responses on responsiveness

A conducive situation in the training program is critical in helping participants achieve understanding (Bahctiar, 2021). The teacher service model developed in the in-on-in scheme

helps teachers improve their knowledge, expertise, skills, and competence in teaching (Osamwonyi, 2016). Thus, it can be concluded that the experts and instructors involved in this community service activity are very eligible. The materials presented in the seminars and workshops were considered very suitable with an assessment of 73.3% with the themes and materials of school mathematics. The participants' responses to the themes and materials of this community service program are shown in Diagram 4 in detail.



Theme compatibility

Program compatibility with school mathematics

Diagram 4. Participants' responses on tangibles

However, the participants suggested that the material developed should not be too overwhelming so that they could imitate it to be developed in mathematics learning practices in their schools. This suggestion can be considered for improving the implementation of community service programs in the future. In addition, participants suggested that the program could be implemented with a wider area coverage. Material development was also expected to be more varied; for example, the development of ICT-based media, for example, the use of videos in learning (Winarni et al., 2021), and the development of ethnomathematics-based e-modules (Widiantari et al., 2022) which can support numeracy literacy.

Conclusion

The community service program with an in-on-in training model for junior high school mathematics teachers in West Bandung Regency produced mathematics teaching material products integrated with numeracy literacy and stored in an application called Kotobee. All stages in this program have enhanced teachers' understanding of the importance of integrated numeracy literacy in mathematics learning and encouraged mathematics teachers to create mathematics teaching materials. Although there were several limitations, the integrated numeracy literacy teaching materials were able to facilitate students in using numbers and symbols related to basic mathematics to solve problems of object configuration patterns in the daily life context.

Acknowledgment

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References

Afandi, A. (2020). *Participatory Action Research* (PAR) metodologi alternatif riset dan pengabdian kepada masyarakat transformatif. Disampaikan dalam kegiatan Workshop Pengabdian Berbasis Riset di LP2M UIN Maulana Malik Ibrahim Malang tanggal 22 Pebruari 2020.

Amir, F., Prayama, D., Fadillah, F. & Riyanto. (2022). Pelatihan pembuatan video pembelajaran berbasis IT Guru SMP PGRI Kabupaten Pelalawan. *Dinamisa: Jurnal Pengabdian Kepada Masyarakat*, 6 (5), 1225 – 1231. https://doi.org/10.31849/dinamisia.v6i5.11139.

Bahctiar. (2021). Desain dan Strategi Pelaksanaan Program Pelatihan untuk Capaian Hasil Maksimal. *Journal of Education, Psychology, and Counseling*, 3(2), 127 – 140.

Chairani, Z. (2015). Scaffolding dalam pembelajaran matematika. *Math Didactic: Jurnal Pendidikan Matematika*. 1 (1), 39 – 44. https://doi.org/10.33654/math.v1i1.93.

Dantes, N., & Handayani, N. N. L. (2021). Peningkatan literasi sekolah dan literasi numerasi melalui model blanded learning pada siswa kelas V SD Kota Singaraja. *WIDYALAYA: Jurnal Ilmu Pendidikan*, 1(3), 269–283. http://jurnal.ekadanta.org/index.php/Widyalaya/article/view/121

Durahman. (2021). Penerapan Lesson Studi Melalui Pelatihan Pola In-On-In dalam Meningkatkan Mutu Pembelajaran Pada Madrasah Ibtidaiyah. *EduBase : Journal of Basic Education*, [S.l.], v. 2, n. 1, p. 54-60, sep. 2021. ISSN 2722-1520. Available at: <https://journal.bungabangsacirebon.ac.id/index.php/edubase/article/view/240>. Date accessed: 16 sep. 2023. doi: https://doi.org/10.47453/edubase.v2i1.240.

Fauziah, S. L. (2022). Pendampingan belajar pada bidang literasi dan numerasi siswa sekolah dasar di masa transisi. *Jurnal Basicedu* Volume 6, Nomor 2, Tahun 2022, Halaman 2606 – 2615. https://doi.org/10.31004/basicedu.v6i2.242.

Kemdikbud. (2017). *Materi Pendukung Lierasi Numerasi (Gerakan Literasi Nasional).* Jakarta: Kemdikbud.

Kemdikbud. (2021). *Panduan Penguatan Literasi dan Numerasi di Sekolah*. Jakarta: Kemdikbud.

Kilpatrick, J., Swafford, J. & Findell, B. (2001). *Adding It Up: Helping Children Learn Mathematics*. Washington DC: National Academy Press.

Komalasari, K., Rahmat, R., & Anggraini, D. N. (2021). Model In-On Service Training Pengembangan Bahan Ajar PPKn Berbasis Living Values Education Bagi Guru-Guru PPKn. *Abdi: Jurnal Pengabdian Dan Pemberdayaan Masyarakat*, *3*(1), 16-27. https://doi.org/10.24036/abdi.v3i1.79

Muliantara, I. K. & Suarni, N. K. (2022). Strategi menguatkan literasi dan numerasi untuk mendukung merdeka belajar di sekolah dasar. *Edukatif : Jurnal Ilmu Pendidikan*. 4 (3), 4847 – 4855. https://doi.org/10.31004/edukatif.v4i3.2847.

Nuurjannah, P. E. I., Amalia, W. & Fitria, A. Y. (2018). Analisis Kemampuan Literasi Matematis Siswa SMP Di Kabupaten Bandung Barat. *Jurnal Math Educator Nusantara (JMEN) Wahana publikasi karya tulis ilmiah di bidang pendidikan matematika*. 4(1), 15 – 28, https://doi.org/10.29407/jmen.v4i01.12016.

OECD (2023), PISA 2022 Results (Volume I): The State of Learning and Equity in Education, PISA, OECD Publishing, Paris, https://doi.org/10.1787/53f23881-en.

Osamwonyi, E. F. (2016). In-Service Education of Teachers: Overview, Problems and the Way Forward. *Journal of Education and Practice*, 7 (26), 83 – 87. www.iiste.org.

Patriana, W. D., Sutama, S., & Wulandari, M. D. (2021). Pembudayaan literasi numerasi untuk asesmen kompetensi minimum dalam kegiatan kurikuler pada sekolah dasar Muhammadiyah. *Jurnal Basicedu*, 5(5), 3413–3430. https://doi.org/10.31004/basicedu.v5i5.1302.

Sarman, I. W. (2020). Peningkatan kompetensi penyusunan butir soal ujian sekolah berbasis komputer (USBK) melalui pendampingan *In On IN* MGMP Jenjang SMA/SMK. *Neraca: Jurnal Pendidikan Ekonomi*, *5*(2), 33-46.

Selan, M., Daniel, F., & Babys, U. (2020). Analisis kemampuan literasi matematis siswa dalam menyelesaikan soal pisa konten change and relationship. *AKSIOMA : Jurnal Matematika Dan Pendidikan Matematika*, 11(2), 335–344. https://doi.org/10.26877/aks.v11i2.6256

Sofyan, A. (2021). The development of an open-ended approach based on meaningful learning in social studies to improve the critical thinking ability. Indonesian Journal of Learning and Instruction, 4(1), pp.11-18. https://doi.org/10.25134/ijli.v4i1.4340.

Superfine, C., A. (2008). Planning for mathematics instructions: a model of experienced teachers' planning processes in the context of a reform mathematics curriculum. *The Mathematics Educator* 2008,18(2), 11- 22.

Tumuruna, J. (2021). Bimtek In-On-In Daring untuk Meningkatkan Kompetensi Guru Menyusun RPP PJJ Kelas Khusus Olahraga. *Ideguru: Jurnal Karya Ilmiah Guru*, *6*(3), 368-375. https://doi.org/10.51169/ideguru.v6i3.297

Winata, A., Widiyanti, I. S. R., & Cacik, S. (2021). Analisis kemampuan numerasi dan literasi membaca peserta didik kelas XI MA Islamiyah Senori Tuban. *ProsidingSNasPPM*, *6*(1), 659-666.

Widiantari, N. K. K., Suparta, I. N., & Sariyasa, S. (2022). Meningkatkan Literasi Numerasi dan Pendidikan Karakter dengan E-Modul Bermuatan Etnomatematika di Era Pandemi COVID-19. *JIPM (Jurnal Ilmiah Pendidikan Matematika)*, *10* (2), 331-343. DOI : 10.25273/jipm.v10i2.10218.

Winarni, S., Kumalasari, A., Marlina & Rohati. (2021). Efektivitas video pembelajaran matematika untuk mendukung kemampuan literasi numerasi dan digital siswa. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, 0 (2), 574-583. https://doi.org/10.24127/ajpm.v10i2.3345.

Zulyetti. (2014). Penerapan diklat in-on-in untuk meningkatkan kemampuan guru dalam melakukan penelitian tindakan kelas. penerapan diklat in-on-in untuk meningkatkan kemampuan guru dalam melakukan penelitian tindakan kelas, https://bpmpriau.kemdikbud.go.id/2014/12/penerapan-diklat-in-on-in-untuk-meningkatkan-kemampuan-guru-dalam-melakukan-penelitian-tindakan-kelas/