Developing Numerical Competence: A Case Study on Improving Students' Understanding and Solving of Numeracy Problems

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Abstrak

Kompetensi numerik merupakan salah satu keterampilan dasar dalam pendidikan abad ke-21. Rendahnya kemampuan numerik siswa dalam memahami dan memecahkan masalah numerasi menuntut adanya kegiatan pengabdian kepada masyarakat. Tujuan kegiatan pengabdian kepada masyarakat ini adalah untuk meningkatkan kompetensi numerik siswa melalui pendampingan yang berfokus pada pemahaman dan pemecahan masalah numerasi. Sasaran kegiatan pengabdian kepada masyarakat ini adalah siswa SMK Negeri 1 Turen dan SMA Negeri 3 Probolinggo. Metode yang digunakan dalam kegiatan pengabdian kepada masyarakat ini antara lain pelatihan pemahaman dan numerasi melalui pendampingan pemecahan masalah numerasi. Di akhir pelatihan, siswa diberikan kuesioner untuk mengetahui tingkat kepuasan mereka terhadap kegiatan pelatihan. Siswa terlibat aktif hingga akhir kegiatan dan mendapatkan respon positif dengan tingkat kepuasan sebesar 83%. Disimpulkan bahwa kegiatan pelatihan dan pendampingan berjalan dengan sangat baik dan mampu meningkatkan kemampuan siswa dalam memahami dan memecahkan masalah numerasi secara mandiri serta berhasil mencapai tujuan dan sasaran yang ditetapkan. Kegiatan pengabdian kepada masyarakat ini diharapkan dapat menjadi upaya berkelanjutan untuk mengembangkan kompetensi pemahaman dan pemecahan masalah numerasi siswa di sekolah.

Kata kunci*— Kompetensi Numerik, Pemahaman, Pemecahan Masalah, Numerasi*

Abstract

Numerical competence is one of the basic skills in 21st-century education. The low numerical ability in understanding and solving numeracy problems among students necessitates community service activities. The purpose of the community service activities is to enhance students' numerical competence through mentoring that focuses on understanding and solving numeracy problems. The target groups were students at State Vocational High School 1 Turen and State Senior High School 3 Probolinggo. The community service activities used methods such as training in understanding and numeracy through mentoring in solving numeracy problems. At the end of the training, students were given a questionnaire to determine their satisfaction with the training activities. Students were actively involved until the end of the activity and received positive responses, with a satisfaction score of 83%. It was concluded that the training and mentoring activities were implemented very well and were able to improve students' ability to understand and solve numeracy problems independently and successfully met the set goals and targets. This community service activity is expected to become a sustainable effort to develop students' numeracy understanding and problem-solving competencies in schools.

Keywords— *Numerical Competence, Understanding, Problem-solving, Numeracy*

1. INTRODUCTION

Numerical competence is essential for developing the quality of education in the era of globalization. Numeracy is a key skill for understanding and solving problems for high school and vocational school students. Students' numerical competence remains low, posing a challenge to improve their understanding and numeracy skills. Low numerical skills impact student learning outcomes and readiness to face the challenges of the workplace and social life (Wulandari et al., 2021). Ardhiani et al. (2021) stated that low numerical skills in understanding and solving numeracy problems among students necessitate community service activities.

Community service activities are one way to improve students' numerical competence through training and mentoring. Sari et al. (2023) stated that intensive and systematic mentoring can significantly improve students' independent numeracy problem-solving abilities. These community service activities aim to improve students' numerical competence through mentoring that focuses on understanding and solving numeracy problems. This community service activity is expected to contribute to strengthening students' confidence and competence in independently addressing numeracy problems.

2. METHOD

This community service activity targets students at State Vocational High School 1 Turen and State Senior High School 3 Probolinggo. The community service activity utilizes training in understanding and numeracy skills through mentoring in solving numeracy problems. The implementation stages of the community service program are as follows:

1. Identifying partner problems, through initial observations of the community service activities at State Vocational High School 1 Turen and State Senior High School 3 Probolinggo, to identify student numeracy problems, the causes of difficulties, and the learning methods used.
2. Planning the community service activity, by designing a numeracy mentoring program tailored to the characteristics and needs of the students, covering topics such as understanding numeracy concepts, formulating numeracy problems, and solving problems using logical thinking.
3. Implementing training and mentoring, with training and mentoring activities including an introduction to numeracy concepts and strategies for solving numeracy problems, followed by practice solving numeracy problems of low, medium, and high difficulty levels. Next, mentoring and discussions in solving numeracy problems.
4. Discussion and evaluation forums to obtain feedback and hopefully provide positive stimulus for students through sharing, encouraging motivation, and inspiration. At the end of the activity, a questionnaire was administered as an evaluation using non-test techniques to determine the training's achievement.

3. RESULT AND DISCUSSION

The training and mentoring in understanding and solving numeracy problems for students is expected to contribute to strengthening students' confidence and competence in facing numeracy problems independently. The training and mentoring in understanding and solving numeracy problems are very beneficial for students in solving numeracy problems correctly and precisely.

The training and mentoring in understanding and solving numeracy problems received a positive response from students, reflecting their responses to the numeracy competency training. This was evident in the students' attendance, who were always punctual and enthusiastic throughout the training. Furthermore, students actively participated in discussions and sessions throughout the training. Several factors supporting the success of the training activity were: (a) high student interest and engagement in participating in the training, from the initial material delivery process, through training and mentoring, discussions, and reflection and monitoring and evaluation; (b) a desire to master understanding and solve numeracy problems correctly and precisely; (c) interactive discussions and sharing, which fostered confidence in expressing opinions and a strong desire to interact during the training; (d) student activeness throughout the training activity and active involvement from the beginning to the end of the training activity, reflecting their enthusiasm for participating.

In addition to these supporting factors, obstacles also occurred during the training activity, including changes to the training schedule and postponements due to busy schedules and a lack of coordination and information received regarding the training activities. The following is documentation of the training and mentoring activities on understanding and solving numeracy problems at State Vocational High School 1 Turen, as shown in Figure 1.

Figure 1. Training and mentoring at State Vocational High School 1 Turen

The following is documentation of the training and mentoring activities on understanding and solving numeracy problems at State Senior High School 3 Probolinggo, as shown in Figure 2.

Figure 2. Training and mentoring at State Senior High School 3 Probolinggo

At the conclusion of the training, students completed a questionnaire regarding their satisfaction with the training. Analysis of the satisfaction questionnaire revealed that the training was highly beneficial for students and improved their understanding and problem-solving skills in numeracy. The satisfaction questionnaire, with an 83% achievement rate, demonstrated improved understanding and problem-solving skills in numeracy. Student responses to the training and mentoring activities in numeracy understanding and problem-solving were positive. Students were enthusiastic throughout the training, as evidenced by their attendance and active participation in various training activities.

The training and mentoring activities for understanding and solving numeracy problems were carried out with excellent results, with positive responses, and students were able to master numeracy very well. This aligns with (Sari et al.'s, 2023) finding that intensive and systematic mentoring can significantly improve students' independent numeracy problem-solving abilities.

4. CONCLUSION

The training and mentoring activities for understanding and solving numeracy problems received a positive response. Active student involvement throughout the series of activities until the end of the training. The results of the satisfaction questionnaire, with an achievement of 83%, can improve the ability to understand and solve numeracy problems. It was concluded that the training and mentoring activities were implemented very well and were able to improve students' ability to understand and solve numeracy problems independently and successfully met the set goals and targets. This community service activity is expected to become a sustainable effort to develop students' numeracy understanding and problem-solving competencies in schools.

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