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Assistance in the Use of the Quizizz and Mentimeter Platforms to Improve the Competence of Mathematics Teachers in the City of Flores

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| Abstract | The background to the implementation of the Community Service Program was the difficulties teachers and prospective math teachers in East Flores City had in designing and managing interactive learning online. So, the main purpose of this service is to increase the competence of teachers and prospective teachers according to the needs of the target community. The dedication stage consists of (1) the Preparation Stage; (2) the Implementation Stage, and; (3) the Practice, Monitoring, and Evaluation Stage. All stages of the service are carried out in the period 1-30 August 2021. The implementation stage of the service is carried out through the webinar method and the implementation of interactive learning designs using the Quizizz and Mentimeter platforms. The target community is 20 people. The Service Team consists of 3 students and one supervisor. One mathematics education expert from Ahmad Dahlan University (UAD) was involved in the implementation stage. Based on the Practice, Monitoring, and Evaluation Stages, it is known that all participants have implemented the webinar material, and more than 85% of participants stated that this service program was very useful and increased competency in designing and managing interactive learning online. Thus it can be concluded that the implementation of community service has achieved the stated goals. |

| Keywords | Interactive Learning, Interactive Quiz, *Quizizz*, *Mentimeter* |

1. INTRODUCTION

The occurrence of the Covid-19 pandemic caused the transformation of the teaching and learning process from face-to-face to online methods, which was implemented thoroughly in all affected countries, including Indonesia (Atsani, 2020; Devi Herliandry et al., 2020; Sun et al., 2020; Syaharuddin, 2020). Teachers and students who have never previously implemented online learning will generally feel forced to migrate towards distance learning methods (PJJ) with the help of information technology tools that they are newly familiar with (Bao, 2020; Basilaia & Kvavadze, 2020; Mulyanti et al., 2020). Several variations of online learning methods, such as hybrid learning and the implementation of e-learning, can indeed be used as alternative solutions in the midst of a pandemic that threatens health (Andayani & Abdal, 2020; Ganovia et al., 2022; Makhin, 2021). But that does not mean there were no obstacles during the teaching and learning process.

Barriers to online learning can arise due to educators' and students' limitations and constraints on the learning support tools used (Pusung et al., 2021; Sandre et al., 2021; Tethool et al., 2021). In addition to problems with supporting infrastructure, online learning problems also occur due to the lack of teacher competence in designing and managing interactive online learning (Sabaniah et al., 2021; Suprapmanto & Utomo, 2021; Warsito et al., 2022). Especially in learning mathematics, it is stated that the level of effectiveness is low due to teacher interaction which is not as good as during direct learning (Indah Sari et al., 2021; Ndiung et al., 2022; Putri & Munandar, 2021; Salamah et al., 2021). The results of the analysis of learning mathematics at the elementary to secondary levels during Distance Learning (PJJ) show that there are difficulties for teachers in terms of (1) the selection of media or learning resources; (2) determining variations in learning strategies; and (3) interactive learning management (Anzora et al., 2022; Husna et al., 2021; Hutagaol & Nasari, 2021; Mahmudah & Fikroh, 2021; Sirage et al., 2021; Supriyatin & Arfa, 2021; Winda & Dafit, 2021) So it can be understood that most mathematics teachers in Indonesia during Distance Learning (PJJ) are not directly able to manage to learn interactively.

The current condition of mathematics teachers in the East Flores City-East Nusa Tenggara educational environment is also experiencing the same difficulties: being constrained by designing and managing interactive learning in online classes. Based on a literature review, many experts and research results recommend using online quiz platforms such as *Quizizz* and *Mentimeter* to support Distance Learning (PJJ) to make it more interactive (Ambarita, 2020; Manurung, 2020; Wijaya et al., 2021). However, teachers ability has yet to be trained to utilize interactive quiz platforms

currently available for free on the internet. Based on these conditions, the need arises to increase the competency of teachers and prospective mathematics teachers in East Flores City so that they can design and manage interactive mathematics learning through the integration of the *Quizizz* and *Mentimeter* platforms.

The results of a preliminary study conducted by the community service team found data that teachers and prospective mathematics teachers in the East Flores City area wanted a webinar with the main focus being an introduction and technical guidance on using interactive quiz platforms such as *Quizizz* and *Mentimeter*. This hope was then responded to by the Community Service Team (PKM) by designating teachers and prospective teachers there as the target community. To achieve the goal of community service, namely increasing the competence of teachers and prospective math teachers in designing and managing interactive learning, the service team plans to carry out the program "Interactive Learning Media Design Webinar during the Covid-19 Pandemic" with the focus on the main material, namely introduction and technical guidelines for using the platform *Quizizz* and *Mentimeter*.

2.   METHODS

The Community Service Method (PKM) is carried out through webinars and assistance in the implementation process. The focus of the webinar material is an introduction to the Quizizz and Mentimeter platforms, as well as technical guidelines for using these quiz platforms. The target community for service is teachers and prospective mathematics teachers in the educational environment of East Flores City, totaling 20 people as for the origin of the participating institutions, namely: (1) SMAK Santa Maria Monte Carmelo; (2) Captain Fatubaa Middle School IL; (3) Naikoten I Public Elementary School, Kupang; (4) SMKN 1 Aesesa, and; (5) Flores University. The Community Service Team (PKM) consists of 3 students and one supervisor for Dr. Suparman, M.Si., DEA.

The stages of community service refer to the stages that have been developed by Triyono et al. (2022) and Triyono et al. (2023) in the previous community service program, which consists of (1) the Preparation Stage; (2) the Implementation Stage, and; (3) Practice Phase, Monitoring and Evaluation. In outline, the stages and timing of this dedication can be seen in Figure 1.
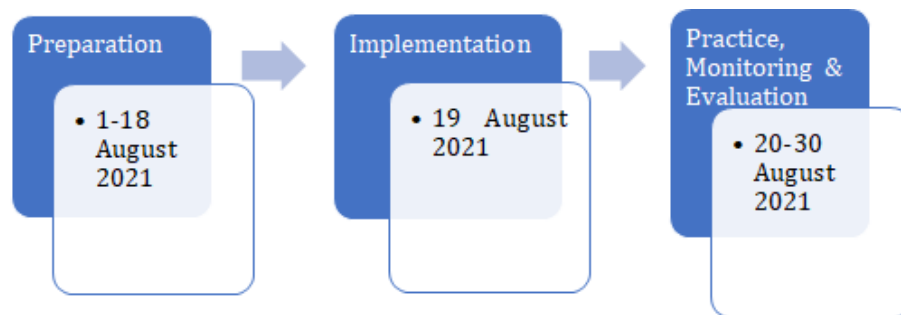
Figure 1. Stages of Community Service Adapted from Triyono et al. (2022) and Triyono et al. (2023)

Figure 1. shows the division of time for each stage of service. In more detail, the activities in each stage are presented in Table 1.

Table 1. Community Service Activities and Implementation Time

Stages	Activity	Execution time
Preparation	Submission of proposals	1 August 2021
	Preparation of participant registration announcement pamphlets	3 August 2021
	Creating a Google Form link for participant registration	3 August 2021
	Publication of registration information and sending invitations to potential participants	3-15 August 2021
	Briefing participants via WhatsApp Group	16 August 2021
	Creation of certificate templates	16 August 2021
	Preparation of webinar materials	17-18 August 2021
	Webinar devise link setup (Zoom, Quizizz, Mentimeter, and Google Form)	18 August 2022
	Compilation of a Satisfaction Questionnaire and Evaluation of the Service Program Implementation	18 August 2022
Implementation	Webinar	19 August 2022
Practice, Monitoring & Evaluation	Practice using Quizizz and Mentimeter to learn mathematics	20-29 August 2022
	Completion of the Satisfaction Questionnaire for Implementation and Evaluation of the Service Program	20-29 August 2022
	Analysis of the results of the questionnaire	30 August 2022

| Certificate delivery | 30 August 2022 |

Table 1. Presents the implementation time for the Preparation Stage on 1-18 August 2021, the Implementation Stage on 19 August 2021, and the Practice, Monitoring & Evaluation Stage on 20-30 August 2021. The parties involved in these stages are three community service team members, supervisors, and prospective participants. The other party involved was one mathematics education expert from Ahmad Dahlan University who acted as the speaker for the webinar, namely on behalf of Dr. Rully Charitas Indra Prahmana, S.Si., M.Pd.

The activities in the Preparation and Implementation Stages require an online-based platform as a supporting facility, namely: (1) Whatsapp Group; (2) Zoom Meetings; (3) Google Forms; (4) Quizizz, and; (5) Minutes. Activities in the Practice, Monitoring & Evaluation Stage require a Google Form to complete a questionnaire. The questionnaire used is a Satisfaction Questionnaire and an Evaluation of the Service Program Implementation. The questionnaire consists of 4 questions with multiple-choice answer types and 1 question with short answer types. Multiple-choice answers refer to the Likert scale (Likert, 1932). Questionnaire questions number 1-3 with multiple choice answer types are intended for the process of monitoring and measuring: (1) the suitability of the material with the needs of the target community; (2) the level of usefulness of the service program, and; (3) improving the competence of the participants. Questionnaire questions number 4 and 5 are more intended as a means of evaluating the service team who are implementing the activity.

It should be noted here that the questionnaire can only be filled out by participants who have practiced using *Quizizz* and *Mentimeter* in learning. After filling out the questionnaire, participants are entitled to a certificate. The service team determines that the success of this service is if 85% of participants state "Very Satisfied/Very Useful" with the implementation of the service program.

3.   FINDINGS AND DISCUSSION

The webinar method was chosen as an alternative way to achieve the objectives of the Community Service (PKM) program due to the conditions of the Covid-19 pandemic, which was still a ban on face-to-face activities. So that the activities in each stage of this service also need adjustments, as explained below.

3.1. Preparatory Stages

The preparation stage begins with a coordination meeting with three service team members and one supervising lecturer. Coordination meetings were held

virtually three times using the *Google Meeting* platform. The first coordination meeting produced a service proposal document approved by the supervisor and submitted to the university. The results of the approval from the university were permitted to carry out community service and support a community service fund of one million rupiahs. The second coordination meeting produced a webinar announcement pamphlet attached with the *Google Form* registration link and the video call link, as shown in Figure 2.

Figure 2. Participant Registration Announcement Pamphlet

They are seen in Figure 2. Some of the information presented in the pamphlet, namely the day and time of the webinar, *video call* link, registration link, as well as the webinar presenters, namely: (1) Dr. Rully Charitas Indra Prahmana as a resource person; (2) Dr. Suparman, M.Sc., DEA as the welcoming speaker, and; (3) Rusmin R.M. Saleh is a member of the service team who acts as a moderator. The third coordination meeting discussed technical matters regarding the publication of registration pamphlets and follow-up on potential participants who had already registered via *Google Forms*.

The pdf versions of pamphlets and invitations were delivered to several educational institutions in East Flores City via institutional email and Whatsapp numbers. Prospective participants must register on 3-15 August 2022 via the Google Form link attached to the flyer or pdf version of the invitation. As of August 15, 2022, there were 20 applicants, namely from the University of Flores (9 participants); SMAK Santa Maria Monte Carmelo (3 participants); SMP IL Captain Fatubaa (3 participants); Naikoten I Public Elementary School Kupang (3 participants); and SMKN 1 Aesesa (2 participants). The participants who joined the Whatsapp Group were then given a briefing regarding the technical implementation of the webinar.

The service team then compiled questions from the Satisfaction Questionnaire and Evaluation of the Service Program Implementation, namely: (1) "Give your assessment of the suitability of the material with the competencies you need"; (2) "Give your assessment of the level of use of this program," and; (3) "Give your assessment of the competency improvement that you experienced"; (4) "Give your assessment of the level of satisfaction with the service provided by our team," and; (5) "Give suggestions for improvement and material recommendations for our next service program!"

The next preparatory activity is the preparation of webinar materials by presenters using PPT, which includes material: (1) interactive mathematics learning designs during a pandemic; (2) an overview of the *Quizizz* and Mentimeter platforms; (3) technical guidelines for using the *Quizizz* and *Mentimeter* platforms, and; (4) the practice of using the *Quizizz* and *Mentimeter* platforms. Some links need to be prepared to support the material delivery and use quiz platforms: *Quizizz, Mentimeter, Zoom Meeting,* and *Google Form* for attendance purposes. Another additional tool is making certificate templates for participants. Until this stage, the webinar preparation has been completed, and the webinar is ready to be held.

3.2. Implementation Stage

Interactive learning design webinars focusing on utilizing the *Quizizz* and *Mentimeter* platforms are carried out in the order of events in Table 2.

Table 2. Schedule Webinar Events and Practices Using the *Quizizz* and *Mentimeter* Platform

No	Time	Agenda
1	09.15-09.30	Participants enter the Zoom meeting room
2	09.30-09.40	Opening the webinar and delivering remarks by Dr. Suparman, M.Si., DEA
3	09.40-10.40	Submission of material: "Interactive Mathematics Learning Design" by Dr. Rully Charitas Indra Prahmana, S.Si., M.Pd
4	10.40-11.00	The practice of using the *Quizizz* and *Mentimeter* platforms by participants guided by the team
5	11.00-11.15	Submission of announcements
6	11.15-11.30	Closing

From Table 2. it can be informed that Dr. Suparman, M.Sc., DEA opened the webinar as supervisor. In his remarks, he reminded us that online mathematics learning must be designed in such a way as to be interactive, one of which can be achieved through the implementation of quiz platforms that are already available for free.

Submission of webinar materials by Dr. Rully Charitas Indra Prahmana, S.Si., M.Pd., begins by providing examples of interactive mathematics learning designs using several interactive quiz platforms. Furthermore, the presenters introduced the *Quizizz* and *Mentimeter* platforms as interactive quiz media suitable for learning mathematics during the Pandemic Period. The materials regarding *Qiuizizz* presented by the presenters in the outline are: (1) what is *Quizizz*?; (2) an overview of mathematics learning that integrates the *Quizizz* platform, and; (3) the advantages and disadvantages of the *Quizziz* platform. The material regarding Mentimeters, in general, are (1) the definition of Mentimeters; (2) using the *Mentimeter* in learning mathematics; (3) the effectiveness of using *Mentimeter* in supporting interactive learning; (4) the factors supporting and inhibiting the use of Mentimeter in learning mathematics. The content of the material delivered by the speaker is shown in Figure 3.

Figure 3. Webinar Material Display

Figure 3. shows the presenter explaining the interactive learning design during the pandemic using several quiz platforms, followed by an introduction to the *Quizizz* and *Mentimeter* platforms. The next material is a technical guide to using *Quizizz* and *Mentimeter*. The steps for using the *Quizizz* platform are: (1) create an account via *www.quizizz.com*; (2) fill out all the conditions for creating an account; (3) log back into your *Quizizz* account to *log in*; (4) determine the model and make a quiz; (5) create and save the name of the quiz that has been made; (6) make quiz answers; (7) set the duration of the quiz; (8) create a quiz code. The sequence of steps for using the *Mentimeter* platform delivered by the presenters is: (1) create an account via *https://www.mentimeter.com/*; (2) how to *sign up*; (3) how choose as an educator in the

"education" menu and save the choices; (4) make presentations; (5) make a percentage of multiple choice types; (6) how to add pictures to the answer choices; (7) how to provide correct answer information to participants, and; (8) how to import PPT to *Mentimeter*.

In the next session, participants were asked to practice using Quizizz and Mentimeter according to the technical guidelines delivered by the presenters with the assistance of community service team members, as shown in Figure 4.
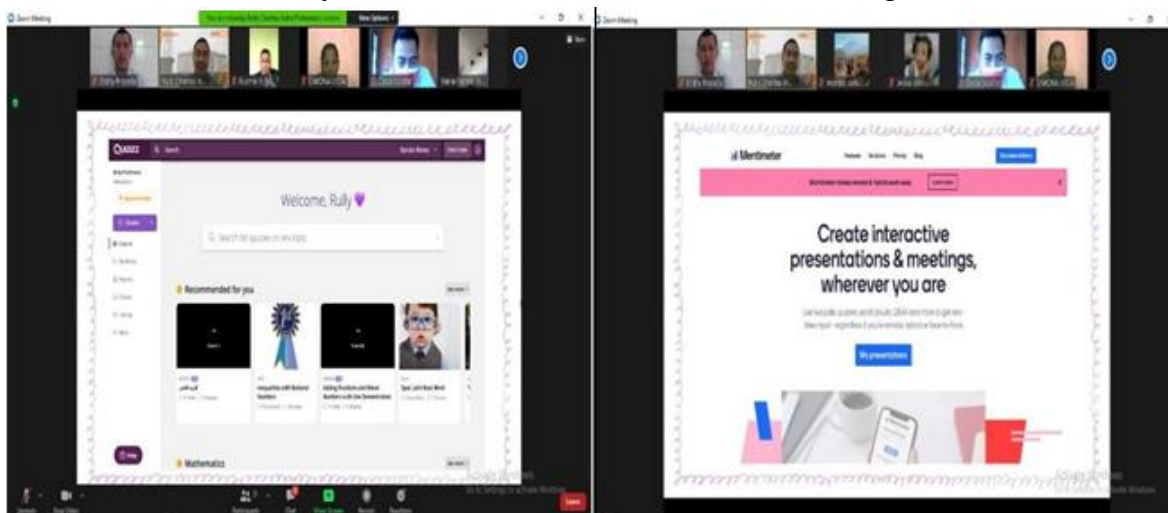

Figure 4. The practice of using Quizizz and Mentimeters

Figure 4. shows the participants and the service team trying to practice using the Quizizz and Mentimeter platforms. At this stage, all of the webinar materials have been submitted, and participants are welcome to fill in attendance via the *Google Form* link. Next is the last session before closing, namely the announcement session.

In the announcement session, the moderator emphasized several things related to the post-webinar agenda, namely: (1) participants are expected to immediately implement the use of the *Quizizz* and *Mentimeter* platforms in learning; (2) participants are welcome to contact the service team and ask for further guidance if there are any problems during implementation; (3) after the implementation stage, participants are expected to immediately fill out the Service Program Implementation and Evaluation Satisfaction Questionnaire, and; (4) certificates will be given to participants who have filled out a questionnaire.

3.3. Practice, Monitoring, and Evaluation Stage

The service team coordinates and monitors the results of learning practices by implementing the *Quizizz* and *Mentimeter* platforms via the Whatsapp Group. In addition, real-time assistance is provided in online learning sessions for participants who want it. As of August 29, 2021, it is known that all participants have implemented

the *Quizizz* and *Mentimeter* platforms in learning and have filled out a questionnaire. Furthermore, the service team analyzed the results of filling out the questionnaire, as explained below.

The results of the answers to questionnaire number 1 are intended to measure the level of suitability of the material with the needs of the target community, as presented in Figure 5.
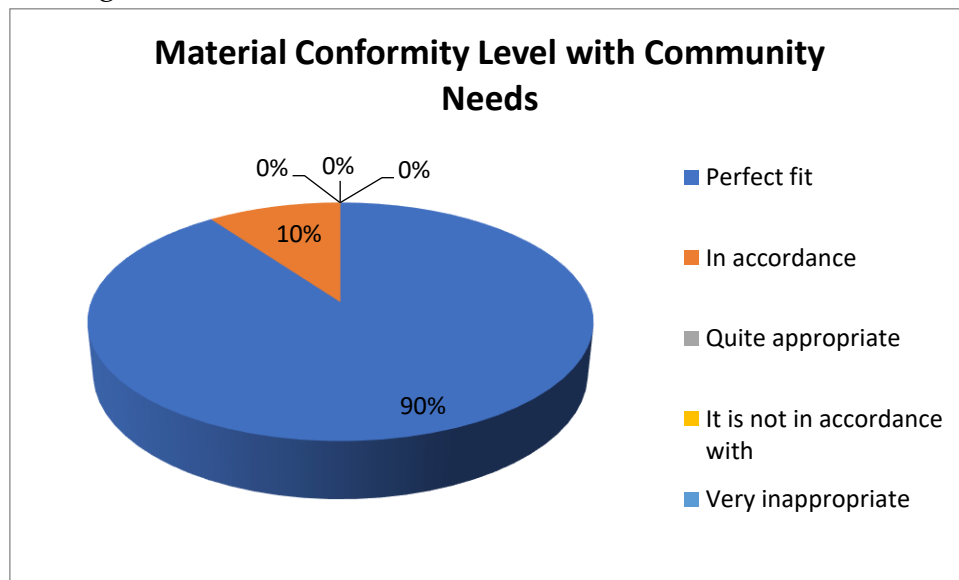

Figure 5. Level of Conformity of the Material with the Needs of the Target Community

Figure 5. 90% of participants felt the material presented in the "Very Appropriate" webinar met their needs. Furthermore, the answers to questionnaire number 2 show the level of benefit from the community service program, shown in Figure 6.
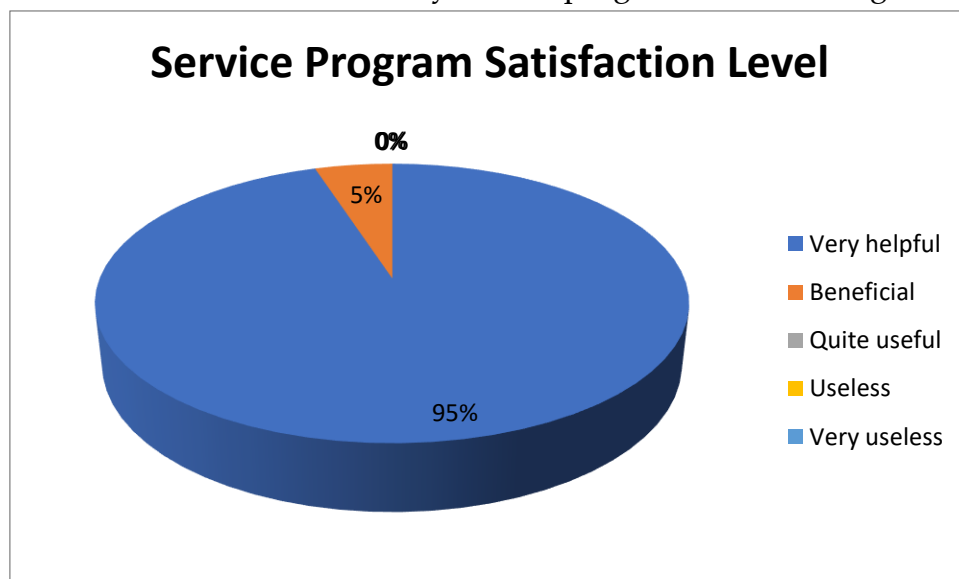

Figure 6. Service Program Usefulness Level

Figure 6. shows that 95% of the participants felt this service program was "Very Useful." Furthermore, the answers to questionnaire number 3 show the level of improvement in the competence of the target community, as shown in Figure 7.
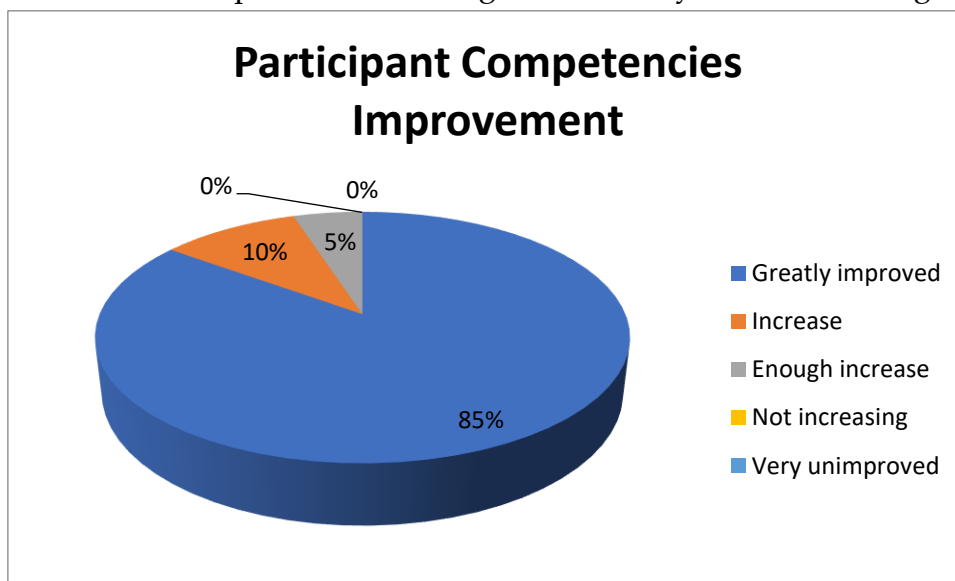

Figure 7. Level of Competency Improvement of the Target Community

Figure 7. informs that 85% of participants felt their competence "Greatly Increased" after participating in the community service program. The answers to questionnaires number 5 and 6 are intended as material for evaluating the service team. The answers to questionnaire number 5 show the level of service quality provided by the service team, as shown in Figure 8.
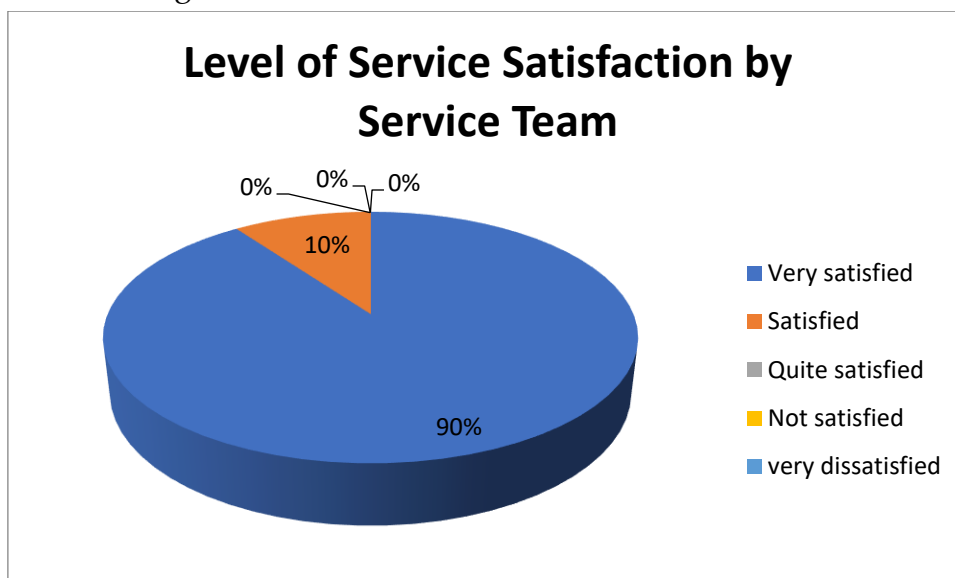

Figure 8. Service Satisfaction Level of Service Team

Based on Figure 5. it is known that 90% or around 18 participants stated "Very Satisfied" with the services provided by the service team. Furthermore, from the answers to questionnaire number 5, there is hope that this kind of Community Service

program (PKM) will be implemented again with material recommendations, namely technical guidance for developing e-modules for mathematics teachers in the City of East Flores.

Discussion

All stages of community service to increase the competence of teachers and prospective mathematics teachers in East Flores City in designing and managing interactive mathematics learning have been carried out according to plan. Through the Practice, Monitoring, and Evaluation Stages, it can be shown that: (1) 90% of participants stated that the material presented was "Very Appropriate" to their needs; (2) 95% of participants stated that the service program was "Very Useful"; (3) 85% of participants stated that their competence was "Greatly Improved" after participating in the community service program, and; (4) 90% of participants stated "Very Satisfied" with the service provided by the service team members. Thus it can be concluded that the implementation of this community service program meets the needs of the target community and achieves the goals set. The participants provided suggestions and recommendations for implementing the Community Service Program (PKM) to focus on technical guidance for developing e-modules for mathematics teachers in East Flores City. The dedication team believes that the success of this program is none other than because the target community needs the material presented in the webinar. Besides that, the participants were enthusiastic about implementing the experience gained through the webinar.

4.   CONCLUSION

Implementing the Community Service Program (PKM) to increase the competence of teachers and prospective teachers from the City of East Flores in designing and managing interactive learning has been carried out according to the determined service stages. The service is carried out through the webinar method, with the main material being technical guidelines for using the Quizizz and Mentimeter platforms, followed by practice implementation. Based on the Practice, Monitoring, and Evaluation stage, it can be shown that all 20 participants have implemented it in learning mathematics. Besides, it can also be shown that 85% of participants find this program "Very Useful" and have an impact on increasing the competence of teachers and prospective teachers, especially in designing and managing online interactive learning. Thus this service program can be concluded that has achieved the stated goals.

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