


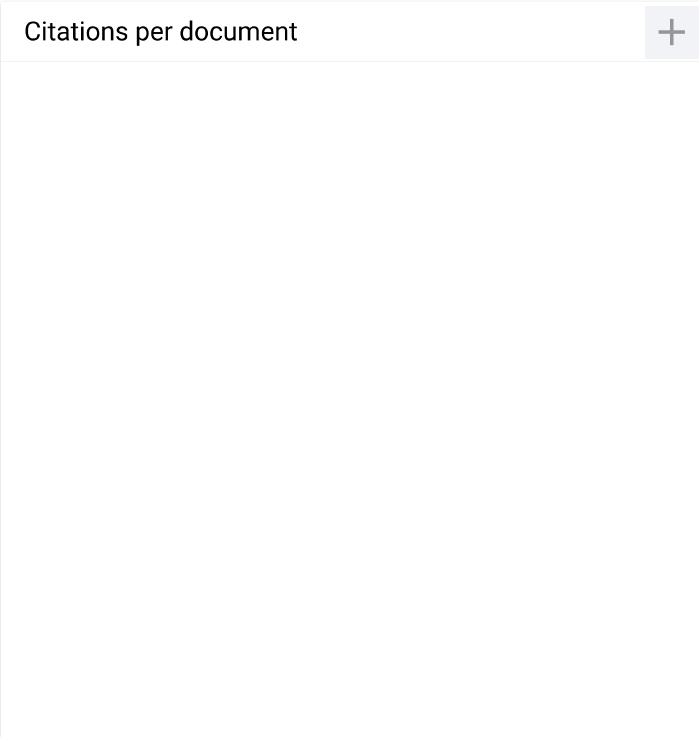
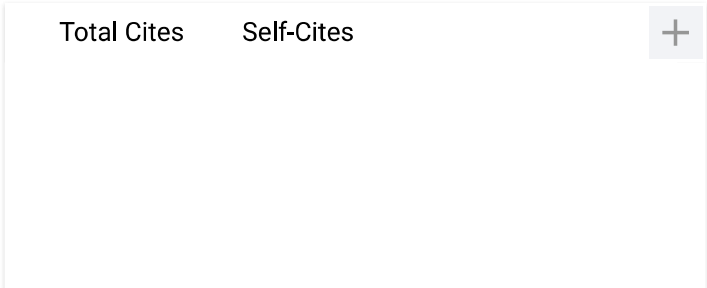
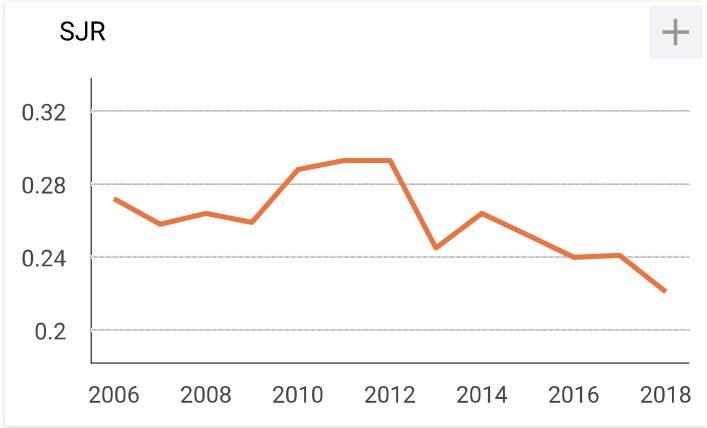
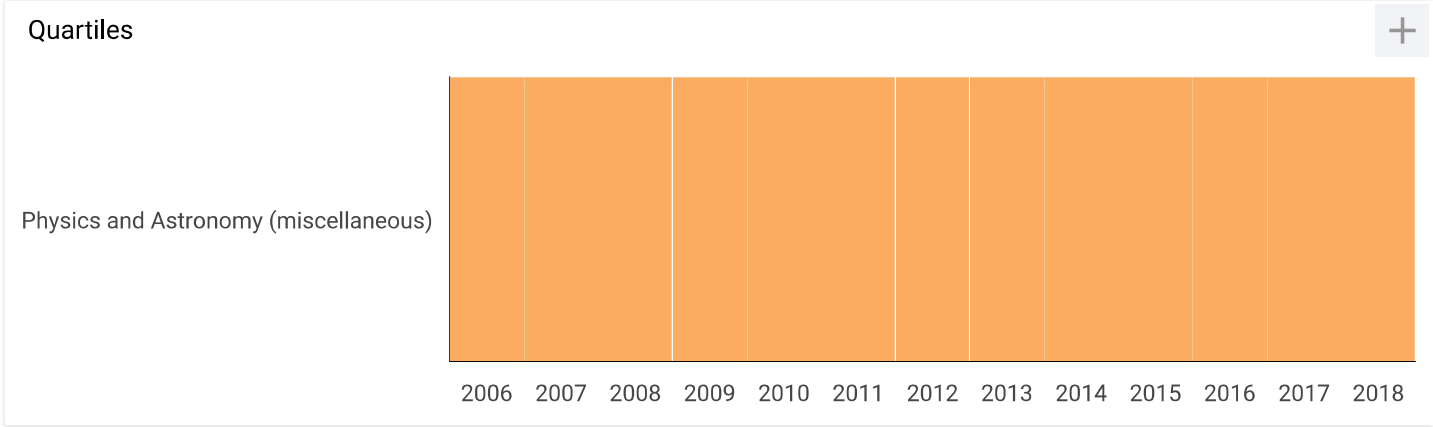
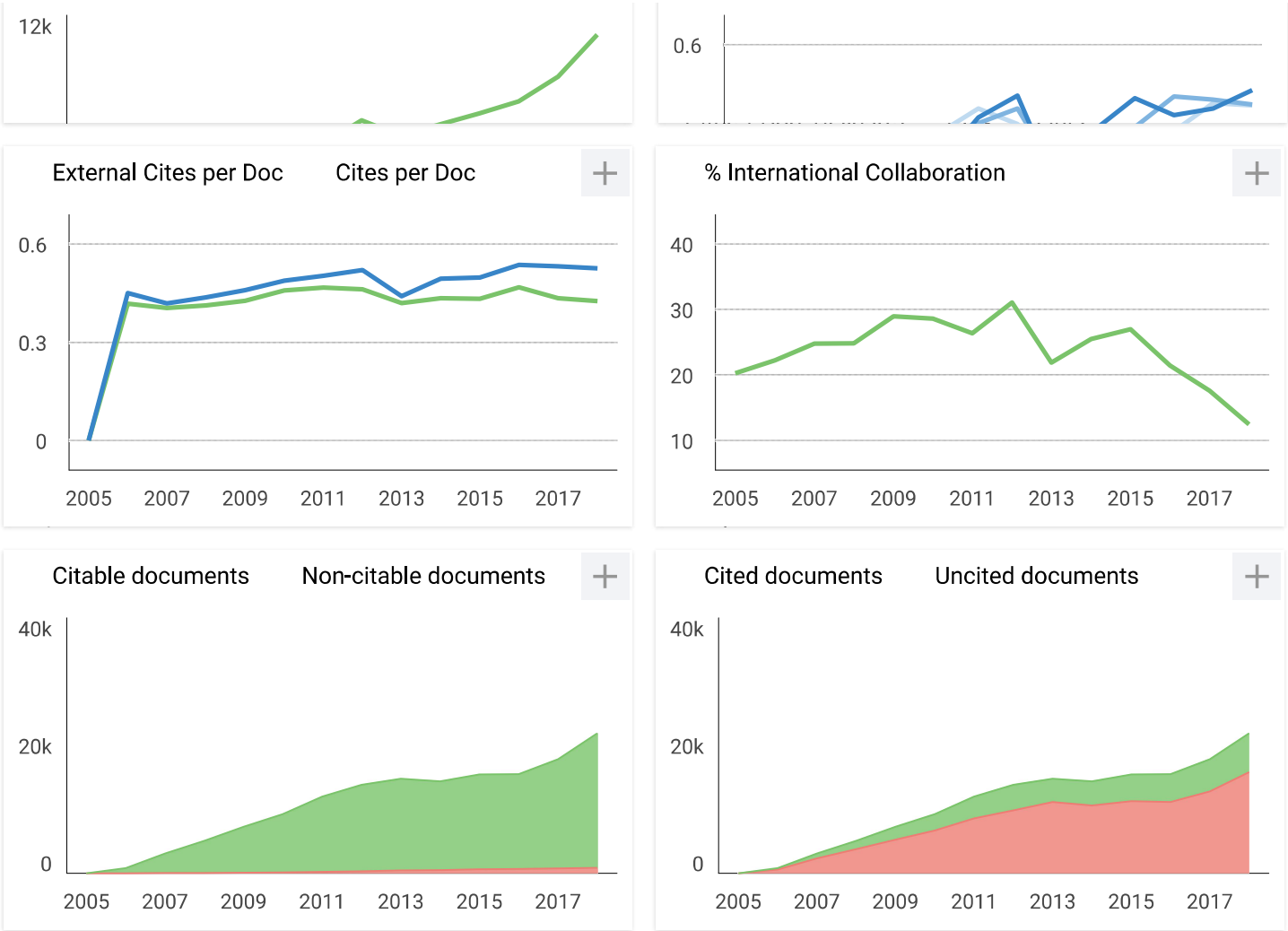


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Primary School Teachers and Learning Media in the Era of Education 4.0

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Abstract. Education era 4.0 demands teachers to be more competent since the nation's progress is determined by education quality, particularly in the primary education level. However, education in Indonesia, especially in Eastern Indonesia, is very apprehensive due to limited facilities and infrastructure as one of the factors that trigger the low quality of education and human resources. The information technology utilization, specifically computer applications for primary school teachers, has not yet run well and equal. Other educational levels that still implement conventional learning that is no longer able to fulfil educational needs for complex societies require innovations and media to address this issue. A preliminary survey in several primary schools in Gorontalo revealed that teachers wanted to use computer applications as the learning media. The training of utilizing computer applications for primary school teachers is not the only solution to improve students' comprehension about learning topics. A good cooperation between related institutions or agencies is required to produce teachers who understand technology in education era 4.0. Higher education institutions that will produce quality teachers should arrange a course curriculum that highly influences students as the teacher candidate. School members should also provide supporting facilities for an effective learning process.

1. Introduction

A nation's progress is determined by education quality. However, education in Indonesia, especially in Eastern Indonesia, is very apprehensive due to limited facilities and infrastructure as one of the factors that trigger the low quality of education and human resources.

[1] states that education in the 21st century will experience paradigm changes, including the changes (1) from terminal learning to lifelong learning, (2) from knowledge mastery-focused learning to holistic learning, (3) from confrontational relationship of teachers-students to partnership image, (4) from emphasizing academic knowledge to the balance of values education, (5) from campaigns against illiteracy to campaigns against the unknowledgeable technology, culture and computers, (6) from isolated teachers to work team, (7) from exclusive concentration to cooperation orientation. Concerning this, education encounters a challenge to produce quality human resources in dealing with competitive demands and challenges[2].

Millennial era 4.0 in the education sector certainly requires teachers as the education personnel to understand the use of technology since education plays a major role in the process of improving quality human resources. University, as one of the educational levels, also has a role in producing potential human resources through several efforts of the government and Civitas Academia by



enhancing teaching and learning activities, such as curriculum improvement, modern technology utilization, education facility upgrading, and teachers training. This recommendation is intended to better the teaching and learning process, including the application of different methods that can actively involve primary school students, creating study groups based on the desire to learn together, and, most importantly, the cooperation between teachers and students.

The utilization of information technology, specifically computer applications for primary school teachers, has not run well and equal, except in the schools with facilities supporting computer-based learning. Other educational levels, where the learning process is still in a conventional way and is no longer able to fulfill educational needs for complex societies, require innovations and media to address this issue.

Various things can be considered the main problem that obstructs education progress in Indonesia. Teachers-oriented learning methods tend to ignore rights and needs along with the growth and development of students so that a fun, enjoyable, and educative learning process has become non-optimal. Over-structured and pressurized learning contents also cause the learning process to be rigid with physical and social conditions and environmental changes. This situation makes the learning process ordinary, unattractive, and not able to bring up students', teachers', and heads of educational institutions' creativity to develop innovative learning approaches. Conventional or classical methods will not help much in the provision of human resources that have integrative competence either in the mastery of religious and general knowledge or technological skills.

Teachers are the communicator and become the key determinant in the learning process that employs lecturing method. Kaur in [3] argues that lectures have never been uninteresting amid learning methods development in the context of active learning. There are some reasons that make lecturing method still become a prevalent way applied in the learning process, such as (1) lectures are efficient in which its time planning is more concerned with organizing contexts and is not pay much attention to learning strategies; (2) lectures are flexible and suitable for all subjects; (3) people can learn to use lecturing method in order to become a good teacher in the classroom, let alone it is easier to learn about this method than other learning strategies; and (4) it is very practical since teachers "merely" tell the students about learning materials [4].

The development and advancement of science and information and communication technology (ICT) can easily provide and complement learning resources. Its utilization in the learning process is one of the influential primary factors; this even has become the main trigger and is in line with several theories in changing learning habits and cultures. In addition to accelerating the flow of information exchange, the use of ICT also drives an increase in the education system that uses computers and the internet as learning media.

Today's use of computers in Primary School level is no longer a new thing. Nevertheless, the thing needs to be a concern in producing primary school teachers is how teachers can use computer applications to support teaching and learning activities in the classroom. Media are the communication channel where the message passes from the communicator to the communicant [5] The word media literally refers to "intermediary" or "conveyor". Educational media are tools, methods, and techniques used to make the communication and interaction between teachers and students in the learning process effective [6].

According to E. De Corte in [7], teaching and learning process is the interaction between teachers' and students' activities during a certain period. Interaction in the teaching and learning process involves some components in which media are one of the main components in this activity. Corte in [7] views teaching media as "a non-personal (not human) facility employed or provided by teachers who play a crucial role in the teaching and learning process to achieve instructional objectives". Teaching and learning activities will run smoothly following General Instructional Objective and Specific Instructional Objective if it is supported by available media. The provision of dynamic, conducive, and dialogic educational media and methods is required for the development of students' potentials. Instructional communication as a term of teaching and learning process implies that media are those whose forms and functions have been designed in order that it can be applied to facilitate the

learning process to the targets. It can also contain and even clarify ideas delivered by the communicator in his activity [8].

This service is expected to give an overview of the benefits of computer applications that the primary school teachers use in improving students' understanding about learning materials.

The aforementioned activity is one of the integration forms of the Three Pillars of Higher Education, i.e., between community services with education and research that must be carried out by every lecturer to perform community services.

On that ground, the topic of this study is "The Utilization of Computer Applications as Learning Media", particularly for teachers at Primary School SDN No 72 of Padebuolo Village, Kota Timur Sub-District, Gorontalo.

Target Groups of Community Services Program

The groups of target/partner that will become the target of Community Services program are homeroom and subject teachers in the primary school. Those teachers are civil servants and regional/school non-permanent teachers.

The aforementioned program was conducted at Primary School SDN No 72 of Padebuolo Village, Kota Timur Sub-District, Gorontalo. This site was selected due to the result of observation showing that this school is willing to accept students with special needs, although it is not an inclusive school. There are only five students with special needs in this school, thus, teachers should be more encouraged to prepare interactive learning materials.

2. Goal and Output

At the end of the community services implementation, there are various goals to be achieved, such as 1) the improvement of primary school teachers' knowledge and skills in using computer applications in the teaching and learning process; 2) the enhancement of students' learning interests to be more actively involved when computer-based learning media are provided; 3) the improvement of communication between students and their parents at home in watching over their children's learning activity utilizing ICT.

3. Implementation Method

This study employed a qualitative approach with an unstructured interview method. This was carried out to examine the participants roles and activities during the training. Also, symbolic interaction approach was used in order to examine in-depth the issues being investigated. The procedures involved several stages as in the following.

3.1. Preparation

3.1.1. Administrative Preparation. The process of implementing this community services program was started by providing an online proposal on the website of <http://lpm.ung.ac.id>. This proposal from lecturers was processed by faculty academic staff and further given to the Community Service Institution (henceforth called as LPM) team.

3.1.2. Knowledge and skills preparation. The implementers of this community services program were the lecturers at Study Program of Communication Science, Faculty of Social Sciences, Universitas Negeri Gorontalo. Based on the preliminary survey conducted in the site area, teachers were interested to learn about computer applications more detailed in helping them prepare learning materials. Besides, the services team also invited interviewees who were competent in the field of ICT to train the teachers to use computer applications in supporting the teaching and learning process in the classroom.

3.1.3. Facilities and Infrastructure preparation. Preparing venue, media, and materials for the training of using computer applications.

3.2. Activity Stages

The activity plan and preparation that have been made for the implementation of the "Computer Utilization as learning media" activity are shown in the following table.

Table 1.Activity stages

No	Activity	Program	Description
1	Permit Arrangement	Permit	Location: National Education of Gorontalo
2	Preparation	<ul style="list-style-type: none"> Materials Arrangement 	Location: Universitas Negeri Gorontalo
3	Program Implementation	<ul style="list-style-type: none"> Materials Presentation Training Evaluation 	Location: SDN No 72, Padebuolo Village

Total effective working hours: 10 hours.

3.3. Program Sustainability Plan

The sustainability of this program was planned based on the evaluation results of the implementation by referring to the goals and output of this activity. This program sustainability plan was performed with several stages, as follows:

- evaluating the program by involving lecturers, students, and teachers of the service target;
- arranging the next program with Primary School teachers in Kota Timur cluster based on the unfinished activity and the development of the finished activity;
- sustainability plan was directed to the main goal of improving primary school teachers' creativity in using computer applications to arrange learning materials that encourage students;
- sustainability plan was also proposed through similar activity in other primary schools that have similar potential to the previous target groups.

4. University Eligibility

In 2012, LPM of Universitas Negeri Gorontalo received grants for one series of programs of Community Service-Community Empowerment Learning with a theme "Developing Common Water Hyacinth (*Eichhorniacrassipes*)-based Craft Business of Woven to Increase Family Income". This program had resulted in the increased number of the societies who participated in the environmental improvement by utilizing water hyacinth. This plant has been the dominant cause of damage in Limboto lake, obtained positive responses from other related parties, especially local government and private parties to be more active in saving the existence of Limboto lake as well as the significant increase of the societies who lived around this area that used water hyacinth as the craft materials and micro enterprises.

Furthermore, other programs in the field of community services and managed by LPM of Universitas Negeri Gorontalo are community services for young lecturers get non-tax revenue fund source with a total of 50 titles; community services for lecturers have Public Universities Operational Assistance fund source with a total of 10 titles; community services for lecturers gain Directorate General of Higher Education fund source; Science and Technology for the Community Program for lecturers is one title; Community Service-Community Empowerment Learning Program for lecturers and students gets two titles, Application of Education Quality Development Model Program for lecturers are three titles; Community services in the form of Wirakarya Campsite are conducted by lecturers and students in Iluta Village, Batudaa Sub-district, Gorontalo Regency; Community services

collaboration program with related agencies, including Business Incubator Program, coaching activity provided to 30 Tenant SMEs for 8 months in collaboration with the Provincial Office of Cooperatives, Industry and Trade. Gorontalo and LPM of Universitas Negeri Gorontalo funded by the Ministry of Cooperatives and MSMEs of the Republic of Indonesia with State-owned Enterprises Program of Developing Village is a coaching activity for palm sugar craftsman in Mongiilo Village by Bank Rakyat Indonesia (Indonesian commercial bank) in collaboration with LPM of Universitas Negeri Gorontalo and Bachelor Youth Program as the driver of the development in rural areas, i.e., mentoring activity for Bachelor Youth placed in the collaboration village between Education, Youth, and Sport Office of Gorontalo Province and LPM of Universitas Negeri Gorontalo funded by the Ministry of Youth and Sport of the Republic of Indonesia; Program of Improving the skills of Instructors and Mentors in LPM of Universitas Negeri Gorontalo in the form of Entrepreneurship Training of Trainers (TOT) for instructor candidates of LPM of Universitas Negeri Gorontalo.

5. Results and discussion

5.1. Results

The main purpose of the implementation of Community Services of Faculty of Social Sciences, Universitas Negeri Gorontalo in 2018 was in accordance with the theme “The Utilization of Computers as Learning Media of Primary School Teachers” at Primary School SDN No. 72 of Padebuolo Village, Kota Timur Sub-District, Gorontalo.

The training for primary school teachers to use computer applications that support the teaching and learning process is an effort to help them achieve an effective process. Nonetheless, teachers’ readiness as an educator should be importantly concerned. The ability to operate computer applications is not an easy matter for senior teachers in particular. Students in this era of education 4.0 have been familiar with technology, including computers and other information media. It will be very worrying if the students are better to operate computer applications than their teachers.

The hardest thing is that teachers are no longer encouraged to learn the use of computer applications to support the teaching and learning process, whereas, in the interactive learning in the classroom, students will be more interested if their teachers apply interactive media in the teaching process. In learning Natural Sciences, for instance, students will be more fascinated to study about cell development of living things if the materials are presented in a video rather than putting pictures on a paper that is usually stick on the whiteboard.

Table 2. Levels of education

Education	Homeroom Teachers	Religion Teachers	Sports Teachers	Non-permanent Teachers	Total
Teacher Education School / Sports Teacher School Graduates	1	-	1	-	2
Senior High School / Vocational High School Graduates	-	-	-	-	-
Associate Degree	1	-	-	-	1
Bachelor's Degree	7	-	-	5	12
Master's Degree	1	-	-	-	1
Total	10	-	1	5	16

The above table shows that this school is dominated by teachers with a bachelor’s degree. However, it does not mean that they are capable of utilizing computer applications in the learning

process. The results of the three-day training for eight hours/day reveal that teachers are motivated to use computer applications in the teaching and learning process, yet they still find it difficult to understand the computer operation steps. As many as ten teachers out of 16 have accomplished the task very well and been able to create interactive learning materials on time. Meanwhile, the remaining six teachers are quite slow in comprehending the materials and finishing the task to make interactive learning materials due to the age factor. However, they still feel enthusiastic about getting the task done.

After participating in this training, every teacher has one-week monitoring. Learning materials are selected based on their suitability for using interactive computer applications. It is found that students are more passionate in the learning process, so that teachers do not need to explain the materials in detail since the computer application presents an interactive video about learning materials comprehension procedures.

5.2 Discussion

The use of computers in learning is not a new thing in the era of industry 4.0. Utilizing computers as supporting learning media for primary school teachers is not merely because they want to be seen as individuals who understand technology. Education universities in Gorontalo, as institutions that produce a cadre of teachers, must pay attention to the related curriculum after the graduates are finished and devote themselves as primary school teachers. Education department graduates who want to be primary school teachers should also be able to adjust and be competent in their respective fields of knowledge. Teaching and learning activities in university for primary school teachers should have been motivating them to be professional in which they act as a bridge of knowledge for the students. In fact, only a few of the teachers who understand Information Technology. Being a professional teacher in a field of knowledge is hard to achieve if it is not taken with self-intention. It is reasonable for teachers to have a basic concept of knowledge to teach children in their development phase. Therefore, it will become a good foundation for the students later in high school.

By referring to the changes of education paradigm that enters the 21st century according to Makagiansar in Darmadi-2018, at point 5 "from campaigns against illiteracy to campaigns against unknowledgeable technology, culture, and computer", it is expected that students can be directed since an early stage to use computers as learning media.

6. Conclusion

Current conditions require primary school teachers to master information and communication technology. It is because students, from an early age, have been introduced to information technology both formally and informally. It is not easy to become a professional teacher in the era of industry 4.0 by simply relying on the degree of bachelor or master without being able to master technology.

7. Suggestion

Education policymakers need to find the cause and best solution for primary school teachers who have not been able to take advantage of ICT progress. However, the essential thing to be concerned is the teachers' condition and their readiness in adopting the use of ICT in teaching and learning activities.

8. Appendix

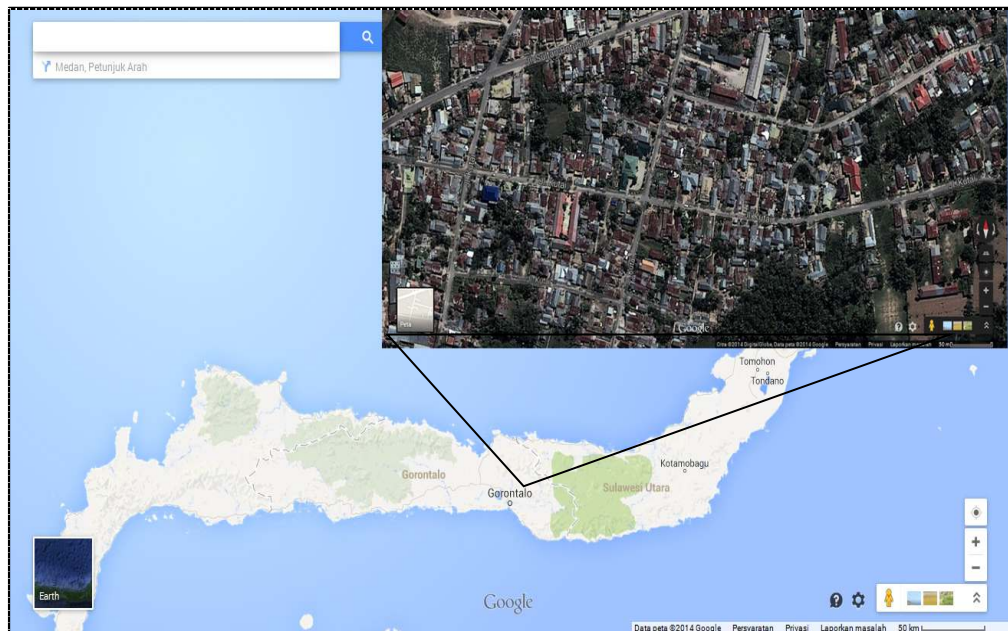


Figure 1. The map of the location of community services program in Padebuolo Village, Kota Timur Sub-district, Gorontalo, Gorontalo Province

— Location Distance from Universitas Negeri Gorontalo = 4 Km

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