The effectiveness of learning using social media to improve student's communication skills in waves topics

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Abstract. The purposes of this research to measure effectiveness of learning media assisted by social media to improve students’ communication skills on wave concept. The research method is an experimental research method, which applies the design of One Group Pre-test-Post-test with problem-based learning model. This research is conducted at SMP Negeri 1 Limboto to the 28 samples. The findings show that the average of students’ communication skills has differences. It is shown by the result of N-Gain of 0.62 which is in moderate category. Based on the result, it can be concluded that the learning set assisted by social media is effective to improve students’ learning skills on the wave subjects.

1. Introduction
Education is an activity to optimize the development of potential, skill, and personal characteristics. Education is basically an effort to provide knowledge, develop the personality and skill of each student. Through education, everyone tries to develop himself or herself to face challenges of every change that is caused by the advancement in science and technology. It demands an effective and efficient learning process which is: interactive, inspiring, fun, challenging and motivating the students to actively participate in, as well as giving enough space for initiative, creativity, independence in accordance with talent, interest, and physical and psychological development [1].

The learning process held in education is expected to be able to generate graduates with noble characters, relevant skills, and related knowledge. Therefore, the learning process being held has to involve the maximum activeness of students either with teacher-centered learning or student-centered learning. The key is how the learning process is more contextual, scientific, and there is conformity among competence, material, and assessment system with the curriculum.

The development of more sophisticated science and technology is triggered by the industry revolution 4.0, which causes the world of education to experience rapid development. The development leads to the improvement of the learning process either from learning set arrangement or facility and infrastructure that support the learning process. Learning set is a set of things made by a teacher and used in the learning process. While facility and infrastructure, in this case, is the learning media is a communication facility between teachers and students, which supports the learning process, especially in delivering the lesson. There are various kinds of media that can be used in the learning process either print, audio, visual, and audiovisual media [2].

As time goes by, communication learning media also experiences rapid development. For instance, at this moment various kinds of learning media are developed in the world of education by utilizing internet networks such as the use of social media in supporting the learning is easier to implement. The
social media which often used to support the learning process is Facebook, WhatsApp, Instagram, twitter, and others. The above-mentioned social media are the kinds of multimedia used by utilizing a computer/wifi network. These media are basically very practical which means easy to get. For that reason, social media can be learning support as they are not merely a space to write up the personal story. The social media in learning is normally called multimedia which is a product of digital technology advancement in which they are able to provide a rich learning experience to the users. [3]

The learning media is important to be used in the learning, the reasons for its importance are stated as follows: a) to improve learning quality; b) new paradigm demand; c) market needs; and global education vision [2]. In its development, various kind of learning media is used in the learning process either as an innovation media, new media, and renewable media. The kinds of media used are visual, audio, audiovisual, print and electronic media or multimedia which utilize computer/wifi networks to make communication among students easier [4].

The survey result conducted in September 2018 toward teachers and students regarding the use of social media shows that; a) almost all of the teachers and students utilize the internet network only for games, browsing, and write personal story; b) teachers and students do not utilize the social media for learning; c) teachers and students do not utilize social media as a control of students in learning. Based on the explanation above, the researcher is willing to conduct research entitles “The Development of an Innovative Learning Set Assisted with Social Media to Improve Communication Skills on the Topic of Wave at SMP Negeri 1 Limboto Gorontalo”.

2. Methods
The research method is an experimental method, which applies the design of One Group Pretest-Posttest[5] with a problem-based learning model[6]. This research is a part of Research and Development (R & D) with ADDIE model. The learning set developed is syllabus, lesson plan, teaching material, students’ worksheet, students’ communication test, and the appropriate assessment instrument. This research is conducted at SMP Negeri 1 Limboto Gorontalo to the 28 samples.

3. Results and Discussion
The students’ activities are analyzed with the formula of the average percentage of students’ activities [7], which obtains the following findings:

| Implementation | Percentages | Mean  |
|----------------|-------------|-------|
| I              | 81.83%      |       |
| II             | 83.57%      | 83.78%|
| III            | 85.92%      |       |

Based on table 1, the mean percentage of students activities for three meetings is 81.83% in meeting 1, 83.57% in meeting 2, and 85.92% in meeting 3. Thus, the average percentage of students’ activities is in a very good interpretation, which is 83.78%. Students’ communication skills in this research consist of written and oral communication. The indicator determination of students' written and oral communication skills are initially based on previous research [8]. However, the indicators changed after being revised through Forum Group Discussion (FGD) based on the suggestion, input and response from the validation expert and practitioner by considering the suggestion, input and response from the supervisors. The FGD produces indicators of written communication skills which consist of: structure, content, and development. While, the indicators of oral communication skill consist of presentation, content/information, collaboration, and logic.

Students’ communication skill does not only happen in the learning process but also in the social media group. Students’ activities in social media group in the form of discussion that discusses wave topic. This discussion is guided by the teacher so that the questions and answers, responses, and comments among the students can take place. The discussion aims to utilize social media as the
supporting tool/aid in learning, so the learning process in the classroom does not take a long time. Besides, it can help the mastery of wave topics for the students.

The form of students’ skill test is a description test. The test is conducted before learning (pre-test) and after the learning process by using social media of WhatsApp (post-test). The result of the students’ communication skill test can be seen in the table below:

| Respondent | Pre-Test | Post-Test |
|------------|----------|-----------|
| 1          | 64       | 66        |
| 2          | 19       | 61        |
| 3          | 49       | 75        |
| 4          | 63       | 59        |
| 5          | 50       | 85        |
| 6          | 56       | 80        |
| 7          | 10       | 80        |
| 8          | 15       | 80        |
| 9          | 19       | 76        |
| 10         | 21       | 85        |
| 11         | 24       | 68        |
| 12         | 28       | 76        |
| 13         | 13       | 70        |
| 14         | 60       | 70        |
| 15         | 10       | 70        |
| 16         | 10       | 84        |
| 17         | 26       | 86        |
| 18         | 15       | 85        |
| 19         | 10       | 86        |
| 20         | 15       | 78        |
| 21         | 60       | 51        |
| 22         | 60       | 78        |
| 23         | 50       | 53        |
| 24         | 53       | 75        |
| 25         | 37       | 90        |
| 26         | 35       | 85        |
| 27         | 38       | 66        |
| 28         | 42       | 77        |
| Total      | 952      | 2095      |

Based on table 1, it obtains that N-Gain on the test of students’ communication skills is 0.62. Thus, this research is relevant to the previous research shows that N-Gain is in the moderate criteria in which there is an improvement in the result of students’ communication tests on the topic of wave [9]. Moreover, another form of communication skill test in this research is an essay. The test is conducted through pre-posttest. Pre-posttest is analyzed with N-Gain formula. The purpose of N-Gain analysis is to find out the improvement of students’ communication test results in both the written and oral tests. The improvement of students’ communication test result can be seen in the graphic below:
Figure 1. The Development Result of Communication Skill

Based on figure 1, it shows that students’ communications test results improve using the assistance of social media as the supporting tool in the learning. The scaffolding of social media can help students to learn independently. Students in developing self-regulated learning skills in the scaffolding of social media learning[10]. This is in line with the previous research by[11]. The only difference is that research uses Facebook while this research uses WhatsApp. The findings of [9]are that by using Facebook, the communication skill of students can improve.

4. Conclusion

Based on the analysis and discussion, it can be concluded that innovative learning set social media-based to improve students' communication skills on the topic of wave at SMP Negeri 1 Limboto is effective and applicable.

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**Acknowledgments**

Thank you to the Directorate of Research and Community Service, Ministry of Research, Technology and Higher Education (DRPM Kemenristek Dikti) and the Institute for Research and Community Service (LPPM UNG) for facilitating this research. Also, thanks to SMP Negeri 1 Limboto Gorontalo for supporting this research grant.