THE IMPLEMENTATION OF '*SANDI RAHASIA'* MEDIA IN TEACHING LINEAR FUNCTION

Laurentcia Noviafta Widya

laurentcia.o@gmail.com

Universitas Negeri Malang, Malang, Indonesia

ABSTRACT

Sandi Rahasia means secret password, which is a learning media related to cryptology that can be used to teach linear function material. *Sandi Rahasia* can be a variation of learning mathematics. The objectives of this research are (1) to find out the implementation of *Sandi Rahasia* media in the learning process, (2) to know students' responses when using *Sandi Rahasia* media in learning, (3) to find out students' motivation after using *Sandi Rahasia*. This research uses the descriptive research method. The subjects in this study were 21 grade VIII students of SMPK Mardi Wiyata Malang. The techniques used are observation, questionnaires, interviews, and data analysis. By using Secret Codes, in the learning process, you can maintain continuous motivation to learn, to create a learning atmosphere that is more interesting, fun, and not boring.

Keywords: Learning media, linear function, secret password

INTRODUCTION

Learning is the process of relating knowledge and forming the character of students. Hamalik, (2010) states that learning is a combination of human elements, materials, facilities, equipment, and procedures that influence each other to achieve goals. In learning, teachers sometimes need assistance facilities in conveying material to students. One of the aids that are often used is Learning Media.

One function of the media is as a teaching aid (Ahmad et al., 2011). Media can make it easier for students to learn, provide concrete experiences, attract attention, activate students' senses, and generate world theory with reality. The use of instructional media must be varied, attract attention, be more fun, and be able to provide learning experiences so that students can grasp the subject matter easily (Primasari & Herlanti, 2014). An interesting learning indicator according to Mulianti, (2013) is learning to attract attention when students want to master knowledge. Learning with media that is new to students can attract attention and trigger students' curiosity.

Based on The Minister of Education and Culture Regulation 2016 No 24 , function material is one of the mandatory materials taught to class VIII students at the junior high school level. Inquiry-learning model has been used by researchers in teaching linear function material. However, from the results of the exams that have been conducted, only 60% of students have passed. So, media can also be used by the teacher in teaching function material in Senior High School.

According to Tafonao, (2018) Teacher should motivate students through the use of learning media. Motivation is the force that drives students to face all difficulties and

challenging situations (Gopalan dkk., 2017). An interesting learning media can improve students' motivation. Making Secret Codes is very interesting for students who want to learn linear functions (Subanji, 2009). Previous studies have shown that the use of various learning media for linear function materials includes the use of Prezi (Rohiman & Anggoro, 2019), Geogebra (Suweken, 2013), Android-based media (Apsari & Rizki, 2018), and Puzzle (Ikhsan et al., 2020). The use of media that is similar to Secret Codes applied by Mubarok, (2019) in learning mathematical function material uses the term Modified Enigma Cryptographic Algorithm.

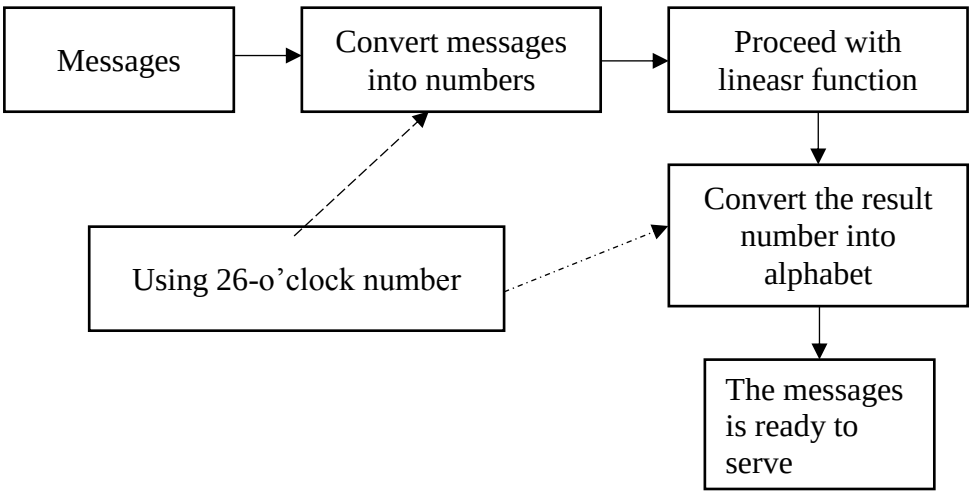
Even though in this era of digitalization, the using of non-digital media is still relevant, the use of simple learning media can still be applied in learning mathematics. Therefore, the researcher wants to apply the use of *Sandi Rahasia* media based on PowerPoint to teach linear function material to 8th-grade students at SMPK Mardiwiyata Malang.

METHOD

This research is descriptive research with a qualitative approach. This research aims to make a description, a systematic or detailed description of the application of Secret Code media for learning Mathematics in Class VIII Functional Materials at SMPK Mardiwiyata Malang. Data were collected through interviews and questionnaires, which is a technique or method of collecting data indirectly (Sugiyono, 2013). Researchers used a questionnaire in the form of questions that were used to determine student responses to the use of Secret Code media in learning mathematics. The research subjects were 21 students of class 8C at SMPK Mardiwiyata Malang. The duration of the media implementation is 80 minutes or 2 hours of math lessons. The collected data were analyzed using data reduction, data display, and verifying conclusion.

RESULTS AND DISCUSSION

Secret Codes are related to Cryptology (Subanji, 2009). Etymologically, cryptography comes from the Greek words, *cryptos* which means secret and *graphien* which means writing (Schneier, 1996). Meanwhile, based on terminology, cryptography is usually defined as the science of writing secret messages to hide the meaning of the message (Paar & Pelzl, 2009).
The steps for making Secret Password or *Sandi Rahasia* refer to (Subanji, 2009) as follows



Meanwhile, in receiving the secret code and deciphering it, the step is almost the same as when sending messages. The difference is that when processing numbers, they are processed using the inverse of a linear function. In using the Secret Code, the message in the letters of the alphabet is changed to the twenty-six o'clock number. This is an implementation of the one-to-one correspondence function. The only correspondence is defined as follows

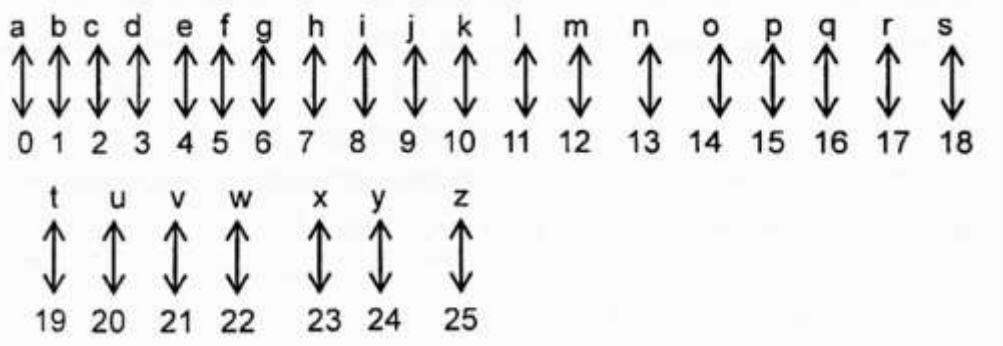


Figure 1. the twenty-six o'clock number

The implementation of *Sandi Rahasia* in Learning

Sandi Rahasia is a learning media for teaching linear functions to students. In learning, *Sandi Rahasia* is used when the teacher teaches material to students and as a motivational trigger for students. In this study, researchers used *Sandi Rahasia* media with Power Point. The form of the power point display that is displayed is as follows

Figure 2. The display of *Sandi Rahasia* media

Figure 3. learning activity using *Sandi Rahasia* media

The analysis of students' responses about Sandi Rahasia

As many as 19 out of 20 students admitted that this was their first time trying to use Sandi Rahasia. For students who answered no, more in-depth questions were asked

Researcher : "Who invited you to try the *Sandi Rahasia* game?"
Student : "Teacher in elementary school, but I'm not really sure."

Based on the questionnaire given to students, 66.7% of students were exposed to Secret Encryption media for the first time. As many as 33.3% of students found the *Sandi Rahasia* media interesting and 66.7% of students said that the media was quite interesting.
As many as 37.5% of students stated that the *Sandi Rahasia* media was easy to understand, 37.5% of students thought that the *Sandi Rahasia* media was quite easy to understand, and 25% of students thought that the *Sandi Rahasia* media was difficult to understand.

Based on the Daily Assessment score, 40% of the students in the class lacked knowledge of linear functions, and only 3 of these students considered the Secret Code media difficult to understand. The use of secret codes increases the motivation of 100% of students to take the next math lesson. This is in line with the opinion Subanji, (2009) that the use of *Sandi Rahasia* learning media is very attractive for students who want to learn function material.

Students also gave several responses regarding the use of *Sandi Rahasia* media as follows

Table 1. Student's responses regarding the implementation of *Sandi Rahasia*

1.	Can be used for games in class so we don't get bored
2.	it's better to use a more complex password
3.	Learning can be so much fun with this
4.	interesting and exciting
5.	We can use *Sandi Rahasia* again in the class to avoid boredom

Based on the table above it is clear that students are more enthusiastic about learning and

very enthusiastic about using *Sandi Rahasia* learning media. The advantages of using *Sandi Rahasia* media in the class are students are challenged to complete tasks and read all messages that have been sent by their peers through the *Sandi Rahasia*. In the end, they can better remember the subject matter that has been given after applying the concept of one-to-one functions through the *Sandi Rahasia* media.

CONCLUSION

Sandi Rahasia or Secret Password is a media related to Cryptology mathematically and can be used to teach linear function material to students. The use of *Sandi Rahasia* media uses the twenty-six o'clock number. By using the *Sandi Rahasia* learning media, students' learning motivation can be maintained on an ongoing basis, so as to create a learning atmosphere that supports students' interest in learning. By using *Sandi Rahasia* media, students' interest and motivation in learning increase, and it also makes it easier for students to understand the material provided by the teacher. In this case, it can be concluded that the learning media for *Sandi Rahasia* is considered interesting and fun for students, makes students comfortable with the activities they are doing, so that students become more active in learning and are more motivated to take part in further learning. This study has drawbacks, namely, the time for using the media is limited so that it is less than optimal and there are no pre-tests and post-tests so what is observed is only the implementation of learning using *Sandi Rahasia* and student responses.

REFERENCES

Ahmad, Rivai, Sujana, & Nana. (2011). *Media Pembelajaran*. Sinar Baru.

Apsari, P. N., & Rizki, S. (2018). Media Pembelajaran Matematika Berbasis Android pada Materi Program Linear. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *7*(1), 161–170.

Gopalan, V., Bakar, J. A. A., Zulkifli, A. N., Alwi, A., & Mat, R. C. (2017). A review of the motivation theories in learning. *AIP Conference Proceedings*, *1891*(October 2017). https://doi.org/10.1063/1.5005376

Hamalik, O. (2010). *Kurikulum dan Pembelajaran*. Bumi Aksara.

Ikhsan, M., Adfawinata, V., Dessolina, Wahyuningtias, V., & Leonard. (2020). Pengembangan Media Pembelajaran Puzzle untuk Materi Fungsi Persamaan Linier Garis. *Journal of Instructional Development Research*, *2*(1), 29–42.

Mubarok, N. (2019). Implementasi Algoritma Kriptografi Enigma Termodifikasi sebagai Media Pembelajaran Matematika Berbasis PMRI untuk Materi Komposisi Fungsi dan Fungsi Invers. *UNION: Jurnal Ilmiah Pendidikan Matematika*, *7*(1), 65–80. https://doi.org/10.30738/union.v7i1.3211

Mulianti, A. (2013). Using Word Game As the Interesting Way for Student To Learning and Enrich Vocabularies. *SELT 2013 Proceeding*, 87–91. http://ejournal.unp.ac.id/index.php/selt/article/view/6772

Paar, C., & Pelzl, J. (2009). *Understanding Cryptography: A Textbook for Students and Practitioners*. Springer Science & Business Media.

Primasari, R., & Herlanti, Y. (2014). Penggunaan Media Pembelajaran di Madrasah Aliah Negeri Se-Jakarta Selatan. *EDUSAINS*, *6*(1), 67–72.

Rohiman, R., & Anggoro, B. S. (2019). Penggunaan Prezi untuk Media Pembelajaran Matematika Materi Fungsi. *Desimal: Jurnal Matematika*, *2*(1), 23–32. https://doi.org/10.24042/djm.v2i1.3312

Schneier, B. (1996). Applied Cryptography, Second Edition: Protocols, Algorthms, and Source Code in C (cloth). In *ISOCC 2015 - International SoC Design Conference:*

SoC for Internet of Everything (IoE). John Wiley & Sons, Inc. https://doi.org/10.1109/ISOCC.2015.7401749

Subanji. (2009). *Matematika Kreatif*. UM Press.

Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

Suweken, G. (2013). Pengintegrasian Media Pembelajaran Virtual Berbasis Geogebra Untuk Meningkatkan Keterlibatan Dan Pemahaman Konsep Matematika Siswa Kelas Viii Smpn 6 Singaraja. *JPI (Jurnal Pendidikan Indonesia)*, *2*(2), 276–285. https://doi.org/10.23887/jpi-undiksha.v2i2.2172

Tafonao, T. (2018). Peranan Media Pembelajaran Dalam Meningkatkan Minat Belajar Mahasiswa. *Jurnal Komunikasi Pendidikan*, *2*(2), 103–114. https://doi.org/10.32585/jkp.v2i2.113