The use of Kahoot in Trigonometric material during the pandemic Covid-19

Lukmanul Akhsani, Ahmad and Wanda Nugroho Yanuarto
University of Muhammadiyah Purwokerto, Kembaran Banyumas, Indonesia

E-mail : lukmanulakhsani@ump.ac.id

Abstract.
Mathematics is an abstract subject. Many students do not stay long in learning mathematics. The Covid-19 pandemic conditions require students to study at home. This makes students learn to be more independent. There needs to be innovation in learning. The use of Kahoot can assist teachers in making variations in learning. The use of Kahoot can motivate students to learn mathematics. This study shows a positive response to the use of Kahoot. Students enjoy using Kahoot. Kahoot is one of the variations in the online learning they follow

1. Introduction

Currently learning is starting to progress and develop. Learning is a planned and systematic process, because of that the planning is prepared in a complete manner, with the understanding that it can be understood and carried out by others and does not cause multiple interpretations. When it is implemented, good planning is sometimes different from the reality. In fact, teachers in high school often feel that mathematics is a difficult subject for students to understand. Students feel bored when they cannot understand and are bored in taking math lessons at school. Even though mathematics is one of the subjects included in the National Examination.

A mathematics teacher at Muhammadiyah Sokaraja High School experienced the same thing. Facilitated one of the aspirations that emerged from the teachers was that there would be activities by learning mathematics that could motivate students to learn mathematics. Teachers need knowledge and skills in managing classes in mathematics so that students are more enthusiastic and motivated, and enjoy taking mathematics lessons. The findings show specific details that make applications more preferable for teaching and learning [1].

This teacher's aspiration is reasonable because mathematics is a universal science that underlies the development of modern technology, has an important role in various disciplines and advances human thinking. Based on the development of mathematics, the rapid development in the field of information and communication technology today. To master and create future technology requires a strong mastery of mathematics from an early age. Given mathematics subjects need to all students starting from elementary school to equip students with the ability to think logically, analytically, systematically, critically, and creatively, as well as the ability to work together. Kahoot can be
optimized as a digital game-based learning medium to increase student motivation and independence and be used to facilitate the learning evaluation process [2].

The conditions of the Covid-19 Pandemic resulted in unusual learning. Students learn from home online. There are many obstacles experienced by students, including, students must be more independent in learning, learning boredom when there are many assignments, interactions between teachers and students online are constrained by networks, and so on. This requires innovative and varied applications so that students are more excited and motivated to learn mathematics at home. The use of kahoot game media can increase results and interest in learning mathematics [3].

A very good application to use is Kahoot. This application facilitates teachers to provide evaluations for either learning in the classroom or online at home. This application can also be made for multiple-choice questions, short entries, true or false. In general, kahoot has influenced the dynamics and the learning atmosphere has become more enjoyable [4]. The teacher can also manage students’ time in answering questions. Therefore, this application is very good to use online as a variation of home learning in pandemic conditions like now.

2. Research Methodology

This research is a quantitative descriptive study. The kahoot application tested in class X on Trigonometry material. Data collection techniques with student response questionnaires to learning using kahoot. Data analysis used the steps, namely data collection, data reduction and concluding. The student response questionnaire consisted of 12 questions made on a Likert scale consisting of answer choices that strongly agree, agree, disagree and disagree. The criteria for the results of the student response questionnaire are as follows.

| No | Criteria          | Score       |
|----|-------------------|-------------|
| 1  | Very good         | $3 \leq \bar{x} \leq 4$ |
| 2  | Good              | $2 \leq \bar{x} < 3$ |
| 3  | Not so Good       | $1 \leq \bar{x} < 2$ |

Remarks:
\[ \bar{x} = \text{average student response score} \]

3. Result and Discussion

The research conducted in Senior High School, class X, Trigonometry material. The study conducted in May 2020. The situation is currently in the Covid-19 pandemic and students are studying at home. The use of Kahoot greatly helps students in the online learning process. The Kahoot application measurably contributes to increasing the positive results students get during the test [5]. Kahoot can assist teachers in developing the learning process. Kahoot assisted teachers in building trust in their students to accept mistakes, thereby developing their metacognition [6].

The research begins by compiling 10 questions using the Kahoot application. The form of implementation uses a challenge set in 2 x 24 hours. The purpose of this timing is so that students who have problems with the network can work on the second day. Utilization and use of the Kahoot quiz platform can increase the enthusiasm of students in learning [7]. On the first day, only some of them did it. On the second day, all students have done. 15 % of students answered all questions correctly.
The average of each question answered correctly was 54%. The results of the answers for each number are in Table 2.

**Table 2. The correct answer to each question**

| No | Question                                                                 | Type  | Correct |
|----|---------------------------------------------------------------------------|-------|---------|
| 1  | How many degrees are there in one rotation                                 | Quiz  | 86%     |
| 2  | ¼ turn is equal to how many π rad                                          | Quiz  | 55%     |
| 3  | Given right triangle ABC, the right triangle at ∠ABC. If the length of side AB = 3 units, BC = 4 units. sin value A = …. | Quiz  | 50%     |
| 4  | Cos Θ = -4/5, Θ is in quadrant II. The value of Cosec … is …              | Quiz  | 36%     |
| 5  | tan Θ = -6/12, Θ is in quadrant IV. The value of Sin Θ is …                | Quiz  | 41%     |
| 6  | Sin 30ᴼ = tan 60₀                                                             | True or false | 55%     |
| 7  | Sin 0₀ = tan 180₀                                                            | True or false | 64%     |
| 8  | If tan x = 1, and x is obtuse, what is the value of cos x = ….                | Quiz  | 50%     |
| 9  | If sin x = ½, and x is obtuse, what is the value of cos x = ….                | Quiz  | 41%     |
| 10 | really tan x = sin / cos x                                                    | True or false | 64%     |

There are advantages and disadvantages of using Kahoot in this study. The advantages are that students can work wherever they are and not bound by time; speed in answering taken into account and innovations for teachers and students in the learning process. The drawback is that students are constrained by networks, students do not have smartphones, and need to adapt to the kahoot application.

![Figure 1. Students answer questions through Kahoot](image)

Questions in Kahoot are closed after two days of opening. When closed, the students have been working on questions that exist in kahoot. Next, students fill out a student response questionnaire to the use of the kahoot application. The results are as follows

**Table 3. The Questionnaire**

| NO | Statement                                                                 | Not Agree (%) | Less Agree (%) | Agree (%) | Strongly Agree (%) |
|----|---------------------------------------------------------------------------|---------------|----------------|-----------|--------------------|
| 1  | Use of Applications Kahoot more useful to learn in future pandemic Covid-19 now | 0             | 0              | 100       | 0                  |
Learn math by using Kahoot make me more skilled | 0 | 27 | 73 | 9

Applications Kahoot in completing problems in learning mathematics | 0 | 27 | 64 | 9

Applications Kahoot pushed me to find ideas new | 0 | 27 | 73 | 18

Learning math using the Kahoot Application makes me feel good | 0 | 27 | 64 | 9

I understand the material, while studying mathematics using the Kahoot application | 0 | 27 | 73 | 0

Learning math using the Kahoot Application I feel more motivated | 0 | 27 | 64 | 9

Learning mathematics with applications Kahoot can train the ability to self my own | 0 | 27 | 82 | 18

Learn math by using the app Kahoot train me to able to express opinions | 0 | 27 | 82 | 0

Learning mathematics using the Kahoot application makes me more active in learning | 0 | 27 | 73 | 9

Learning mathematics using the Kahoot application makes the material easy to remember | 0 | 27 | 64 | 9

Applications Kahoot make learning mathematics more interesting to learn | 0 | 27 | 73 | 9

| Average | 0 | 19 | 73 | 8 |

Seen on the table, on average 73% of students choose to agree, that is to say, students over many respond to use kahoot be positive. The use of kahoot makes students enjoy learning mathematics. Utilization application Kahoot greatly help learning to be more interesting and more increase in creative axles and activeness of students in the class [8]. Students better understand the problems and are skilled in solving these problems. Students are more easily understand materials and things that are very meaningful for students who were studying mathematics. They will compete to get in on the podium or three sequences the top. Kahoot! as a digital game resource that provides the opportunity for teachers to create quizzes, surveys, and discussions that engage students in content knowledge in a competitive game play format [9]. There are tons of elements in Kahoot! which can increase student motivation include competition with classmates and the included music [10].

Based on the data above, Response Positive also be obtained on application Kahoot in Class four Schools Elementary Kedungkandang gained 70% to aspects of expression and 80% for the aspects of power pull [11]. The average student response score was 2,88 and included good criteria. It demonstrated Kahoot is an application that is very attractive to students. Good student school elementary or school secondary. the effectiveness of the use Kahoot application in classroom assessment practices follow the seven principles votes bait behind the well [12].

Acknowledgments
I would like to express my special thanks to University of Muhammadiyah Purwokerto for supporting the facilities and financial to accomplish this paper.
References

[1] T. AL Rajendran and D. P. Mohd Shah, “Students perception on Gamification: The use of Kahoot,” *Int. J. Sci. Res. Publ.*, vol. 10, no. 05, pp. 773–783, 2020, doi: 10.29322/ijsrp.10.05.2020.p10190.

[2] A. R. Putri and M. A. Muzakki, “Implementasi Kahoot sebagai Media Pembelajaran Berbasis Digital Game Based Learning dalam Mengahadapi Era Revolusi Industri 4.0,” *Pros. Semin. Nas. Univ. Muara Kudus*, pp. 1–7, 2019, [Online]. Available: https://docplayer.info/147482653.

[3] S. Wigati, “Penggunaan Media Game Kahoot Untuk Meningkatkan Hasil Dan Minat Belajar Matematika,” *AKSIOMA J. Progr. Stud. Pendidik. Mat.*, vol. 8, no. 3, pp. 457–464, 2019, doi: 10.24127/ajpm.v8i3.2445.

[4] N. H. Ilmiyah dan M. S. Sumawati, “Pengaruh media Kahoot dan motivasi belajar terhadap hasil belajar siswa,” *Journal Information Engineering and Educational Technology*, vol. 3, no. 1, pp. 46–50, 2019.

[5] MARTYNA MADEJ and MATEUSZ STUDNIAREK, “A theoretical look at the Kahoot! application and its possibilities,” *E-methodology*, vol. 6, no. 6, pp. 21–28, 2020, doi: 10.15503/emet2019.21.28.

[6] P. Atherton, “Kahoot and formative assessment process,” *ResearchGate*, vol. 10, no. 2, pp. 29–39, 2020, [Online]. Available: https://www.researchgate.net/publication/33922010.

[7] R. Fauzan, “Pemanfaatan Gamification Kahoot.it Sebagai Enrichment Kemampuan Berfikir Historis Mahasiswa pada Mata Kuliah Sejarah Kolonialisme Indonesia,” *Pros. Semin. Nas. Pendidik. FKIP UNTIRTA*, vol. 2, no. 1, p. 257, 2019, [Online]. Available: http://jurnal.untirta.ac.id/index.php/psnp/article/view/5764.

[8] M. Octafianti and Sartika, “Pemanfaatan Kahoot untuk Pembelajaran Matematika Siswa Kelas X pada Materi Sistem Persamaan Linear Dua Variabel,” *J. Educ.*, vol. 01, no. 03, pp. 373–385, 2015.

[9] R. Dellos, “Kahoot! A digital game resource for learning,” *Int. J. Instr. Technol. Distance Learn.*, vol. 12, no. 4, pp. 49–52, 2015, [Online]. Available: https://www.itdl.org/Journal/Apr_15/Apr15.pdf.

[10] A. Smith and S. Brauer, “Use of Kahoot! game for increased student motivation and understanding in a Thermodynamics course,” *ASEE Southeast. Sect. Conf.*, 2018,[Online]. Available: http://www.asee-sc.org/proceedings/ASEE2018/papers2018/123.pdf.

[11] A. R. Hakim, S. Rahayu, and R. Affida, “Kahoot on Thematic Learning,” *J. Phys. Conf. Ser.*, vol. 1381, no. 1, pp. 1–5, 2019, doi: 10.1088/1742-6596/1381/1/012035.

[12] N. N. Omar, “THE EFFECTIVENESS OF KAHOOT APPLICATION TOWARDS STUDENTS’ GOOD FEEDBACK PRACTICE,” *PEOPLE Int. J. Soc. Sci.*, vol. 3, no. 2, pp. 2551–2562, 2017, [Online]. Available: https://grdspublishing.org/index.php/people/article/view/849/2892.