**The Effect of Kahoot! Learning Media On Learning Outcomes of German Language Students On The Topic Sprechfertigkeit**

**Samuel Jusuf Litualy, Henderika Serpara, Eldaa Crystle Wenno**

Department of German Language Education, Faculty of Teacher Training and Education, Pattimura University, Ambon, Indonesia

|  |  |  |
| --- | --- | --- |
| **Article Info** |  | **ABSTRACT** |
| ***Article history:***  Received Jun 12, 201x  Revised Aug 20, 201x  Accepted Aug 26, 201x |  | This study aimed to determine the effect of the *Kahoot!* educational game learning media on German language students' learning outcomes in the *Sprechfertigkeit* 2 course. The sample of this study consisted of 37 students. The test instruments were given during the pretest and posttests. The data were processed and analyzed by the SPSS program. The results are as follows: (1) The Cronbach Alpha validity test showed that the study had high validity, namely 0.764> 0.60. (2) The instrument normality test shows the value of p> alpha (0.05) and (3) The statistical test results show that the value of "t-test = 631> t-table = 398. Thus, the calculation results show that there is a significant effect of the *Kahoot!* educational game learning media on learning outcomes of German students in *Sprechfertigkeit* 2. |
| ***Keywords:***  Learning media  Kahoot  Learning outcomes  German language |
| *This is an open access article under the* [*CC BY-SA*](https://creativecommons.org/licenses/by-sa/4.0/) *license.* |
| ***Corresponding Author:***  Samuel Jusuf Litualy,  Department of German Language Education,  Faculty of Teacher Training and Education,  Pattimura University, Ambon, Indonesia  Jl. Ir. M. Putuhena, Campus Poka, Ambon, Maluku, Indonesia 97233  Email: litualysamuel01@gmail.com | | |

1. **INTRODUCTION**

The digital era 4.0 has penetrated almost all human activities in this era, which is inevitable. On the contrary, it makes everyone race to master it [1]. This development continues to demand the need to improve human resources quality [2]. Improving the quality of German language students cannot be separated from the development of learning media, adequate, and quality teaching materials [3]. For a long time, German has been taught as a foreign language in Indonesia to high school / vocational high school students and university students. This shows how important it is to master German. With good mastery of German, students can be helped to broaden their thinking horizons and at the same time increase their knowledge [4].

There are five benefits to why learning German is important. (1) German is an important language for trade because Germany is the leading exporting country in the world. It has a strong economy and is the most important industrial-trade partner for Indonesia in the European Union. In the last 10 years, German has become the regional linguafranca of Central and Eastern Europe. Cross-cultural skills are a vital qualification for a successful business today. German language proficiency helps students open up new markets and be successful in global business and the international labor market. (2) The position of the German language is vital in knowledge and literature. As the language of knowledge and technology, German plays an essential role in research and education. In the 19th century, German as the language of knowledge and literature occupied an important position in the world, ahead of French and, in a certain sense English. (3) As a cultural language, German can open students' intellectual horizons. German culture manifests itself in various forms, such as literature and music, theater and film, architecture, painting, philosophy, and art [5], [6]. Knowledge of German allows students to know one of the great European cultures in its original form [7]. In the world of literature: Goethe, Schiller, Kafka, Grass; music world: Bach, Mozart, Beethoven, Wagner; in philosophy: Luther, Kant, Schopenhauer, Nietzsche; in the world of psychology: -Freud, Adler, Jung - or also in the world of research and knowledge: Kepler, Einstein, Röntgen, and Planck. German is the language of great thinkers. (4) German helps to open the door to the world for students to study at a German university. Although studying internationally in Germany allows students to study without knowledge of the German language, mastering German will undoubtedly benefit students if students master it. If international courses are not available, students will need to prove that students have sufficient German language skills before starting college. Therefore, mastery of the language will provide a wider choice of courses, and (5) German companies in Indonesia and foreign companies in Germany try to get experts with knowledge of the German language. Experts with knowledge of the German language have exciting training, study, and employment opportunities in the European Union [8]. Besides, as a tourist destination, Indonesia is visited by many foreign tourists, such as from Germany, Austria, and Switzerland [9]. For those who work in the tourism industry, German language skills are a good investment [10].

Mastering and using German is essential. However, the fact shows that German language students' learning outcomes, especially in the *Sprechfertigkeit* 2 course, are still low [11]. The reason is due to the unavailability of adequate learning media [12]. For this reason, it is necessary to make improvements in order to increase the achievement of learning German through the application of adequate and appropriate learning media [13].

*Kahoot!*'s educational game is a type of game-based learning, which is easy to create, share and play anywhere and anytime [14]. The *Kahoot!* educational game is an open learning technique. It can be played independently or played with other people (interactive). It is hoped that it can help students improve their mastery of *Strukturen* and their vocabulary in German [15].

In the *Kahoot!* educational game application, students' full support is needed [16]. Meanwhile, from the point of view of educators, it is expected to have high creativity and aggressiveness, especially in regulating, developing, and continuing to design new *Kahoot!* game forms with the addition of *Strukturen* forms and new vocabulary, and regulating the course of the implementation of teaching and learning activities, so that the activity went on smoothly without a hitch [17]. In this situation, students are motivated to learn and are expected to support learning activities by providing energy, time, and thoughts and being ready to work together with fellow students in groups [18]. Based on the description above, the purpose of this study is to examine the effect of *Kahoot!* educational games learning media on learning outcomes *Sprechfertigkeit* 2 in German language students.

1. **LITERATURE REVIEW**
   1. **Sprechfertigkeit Learning Outcomes**

Learning outcomes cannot be separated from learning activities which are a process. Meanwhile, the achievement is the result of the learning process. If someone has learned, there will be a change in behavior in that person, for example, from not knowing to know and from not understanding to understanding [19]. Learning outcomes are abilities that students have due to learning and can be observed through student performance [20]. Learning outcomes as changes that occur in individuals who learn change knowledge and knowledge to form skills, habits, attitudes, understanding, mastery, and appreciation of individuals who learn [21]. Learning outcomes are abilities that students do after receiving their learning experiences [22]. Learning outcomes are related to knowledge, skills, and competencies that students can demonstrate at the end of the formal, non-formal, or informal learning process [23].

Speaking is a tool for communicating structured and developed ideas according to needs [24]. To speak correctly, the speaker must master pronunciation, structure, and vocabulary. Besides, it takes mastery of the problems and ideas presented and understands the speaker's language. Abilities to articulate or pronounce words to express, convey thoughts, ideas and feelings are needed. Speaking fluently in the language being studied means students can actualize different vocabulary and language structures, resulting in communication between fellow students and students and teachers. Talking is a person's effort to convey information, ideas, and ideas using symbols, words, and images [25]. Assessment of speaking skills in German concerns expressions that include (1) Acceptable meanings in which the value given is 2.0 if the meaning of the sentence used is fully structured (according to the flow of the conversation), 1.5 if the meaning of most of the sentences is acceptable, 0,5, if the sentence used, has a relationship with the communication situation but in terms of meaning it is not acceptable, and 0.0, if the sentence used, has no relationship with the communication situation. (2) Vocabulary in which the value is given is 2.0 if the vocabulary used is entirely following the communication situation and conditions that cannot be broadly stated, but students can describe it accurately, 1.5 = the vocabulary used is by the purpose of the communication situation and for terms that cannot be stated logically, but students can provide a description that is close to the direct meaning, 0.5 = Only part of the vocabulary is used in the given communication situation, and 0.0 if the vocabulary used is not in accordance with the communication situation provided. (3) Grammar in which the value given = 2.0 if the sentence used almost have no grammatical errors, 1.5 = The sentence used contains some grammar errors but does not interfere with communication, 0.5 = Due to some grammatical errors language, the sentence used is not clear in meaning, clarity is obtained only with the help of the examiner. 0.0 = There are various grammatical errors, so the meaning of the sentence used cannot be understood. (4) Skills in which the score is given 2.0 = if the student has good speaking skills in dialogue, without having to be assisted by directions from the examiner. 1.5 = Students have satisfactory speaking skills with the help of sentences from examiners, 0.5 = Students can only compose sentences in the dialogue, if assisted by repeated reference sentences from examiners, 0.0 = Students have been assisted with reference sentences from examiners, but still unable to string sentences in dialogue. (5) Speech and intonation in which the value is given = 2.0 = if speech and intonation do not show significant deviations from the spoken standard, 1.5 = pronunciation and intonation show a deviation from standard spoken language, but do not interfere with understanding of the meaning of the sentence, pronunciation and intonation; 0.5 = indicates a significant deviation from the standard spoken language, making it difficult to understand spoken sentences and requiring high auditory concentration to understand; 0,0 if the pronunciation and intonation completely deviates from the standard spoken language, so that the spoken sentence cannot be understood. Based on the theoretical explanation above, it can be concluded that the results of learning German are changes in knowledge, attitudes, and skills obtained by students after participating in the learning process in class, which includes four basic skills, namely hearing (*Höverstehen*), speaking (*Sprechfertigkeit*), reading ( *Leseverstehen*) and writing (*Schreibfertigkeit*) [26]. The results of this study were obtained from the final grades obtained by students after going through the learning process and the test or evaluation process.

* 1. **Kahoot! Educational Game Learning Media**

*Kahoot!*'s educational game in education is one type of learning arranged and organized based on games, which are easy to create, share and play anywhere, anytime, and by anyone [27]. As one of the learning techniques in the form of media, the *Kahoot!* educational game is open, can be played independently, or can also be played with other people, which is expected to help students develop knowledge [28].

Game *Kahoot!* in its application, as a learning medium, can help expand and clarify the message or information provided to smoothen and improve the learning process and results. Also, it is helpful to improve and direct student attention so that they can be motivated to learn, which in the end have an impact on learning outcomes [29].

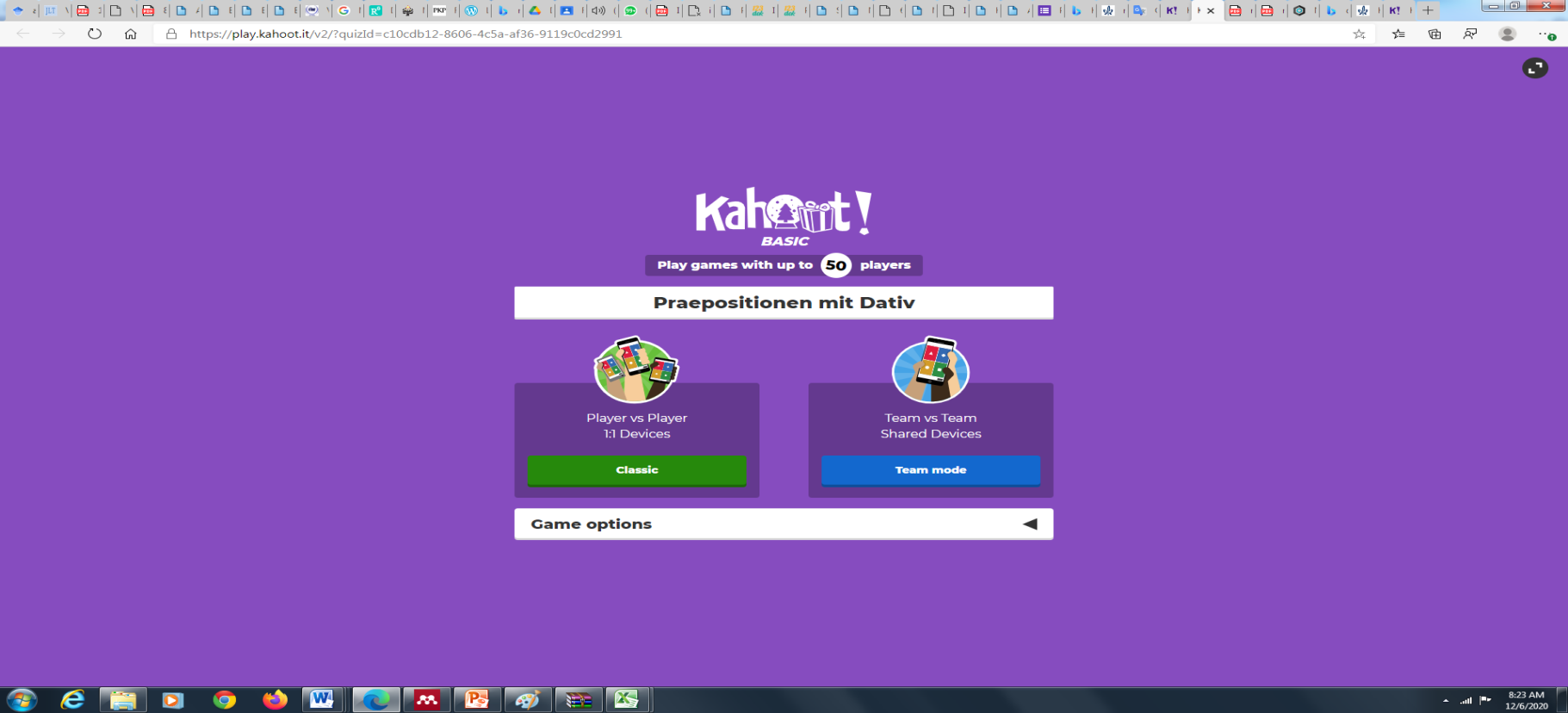


Figure 1. Display of Game Kahoot!

In the *Kahoot!* educational game application, students' full support is needed, namely providing energy, time, and thoughts and being ready to work together with fellow students in groups. Meanwhile, from the point of view of educators, they are expected to have high creativity, especially in the provision and development and design of new *Kahoot!* game forms with the addition of *Structuren* forms and new vocabulary, and regulating the course of the implementation of teaching and learning activities, so that activities progress smoothly without hindrance. In this situation, students are motivated to learn continuously. In implementing the learning process, a lecturer needs to have certain innovations in learning media and the evaluation model because evaluation is a benchmark used to measure the achievement of a lesson's success. *Kahoot!* is a game that is displayed on a computer by a lecturer or teacher. Then, the participants will give answers on the cellphone. The code that comes out of *Kahoot!* will be connected to the participant's cellphone. Each participant will answer the questions given.

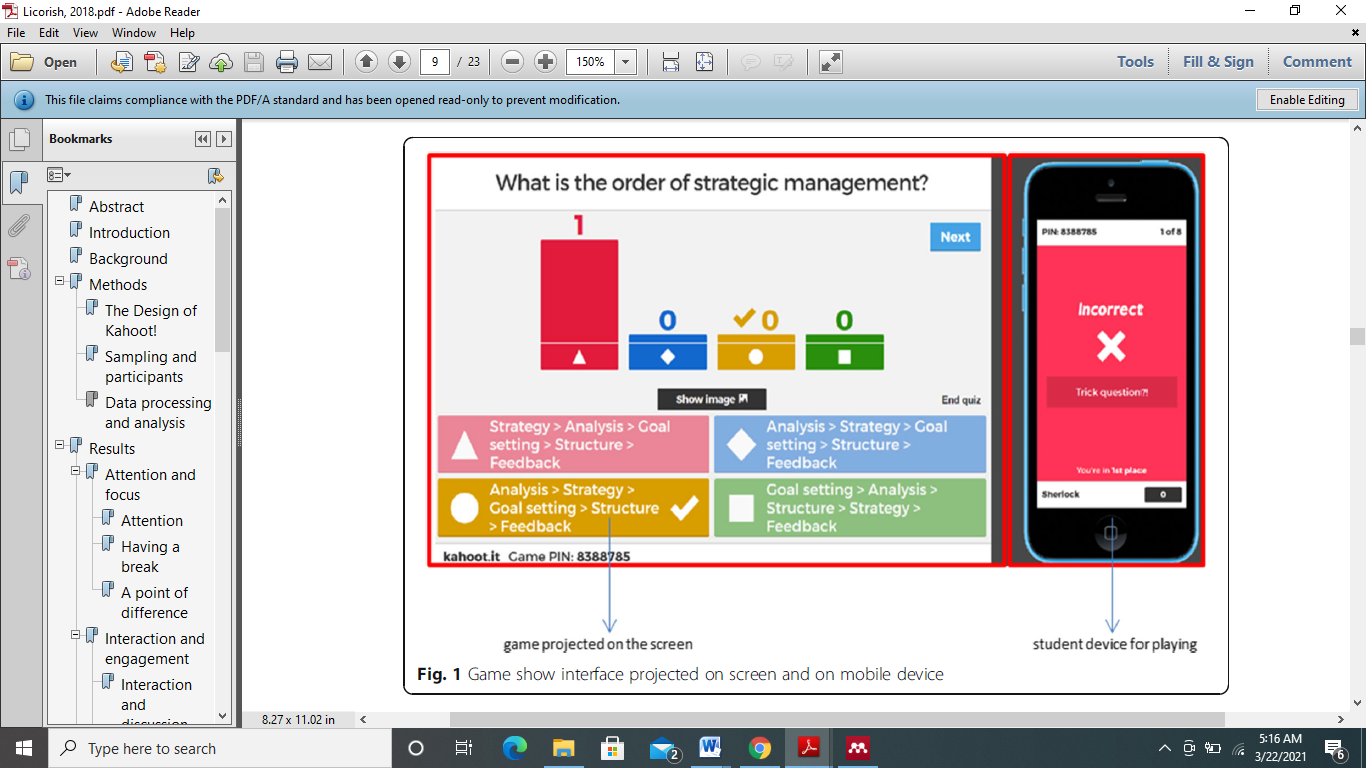


Figure 2. Display of Game Kahoot! projected from computers and cellphones

Kahoot! is a form of game application that has two different website addresses. https://Kahoot!.com/ is for teachers, and https://Kahoot!.it/ is explicitly for learners. "Kahoot!" can be accessed and used free of charge, including all of its features. "Kahoot!" platform can be used for several assessment forms, including online quizzes, surveys, and discussions. In the application, of course, students need an internet network to learn and play this game.

1. **RESEARCH METHOD** 
   1. **Research design**

This research was a quasi-experimental study with a pre-test and post-test group design to determine the effect of the Kahoot! educational game application on the learning outcomes of the Sprechfertigkeit 2 course German language students. This study has two variables, namely the Kahoot! game learning media as the independent variable and the Sprechfertigkeit 2 learning outcomes as the dependent variable.

* 1. **Research Population and Sample**

The study population was the second-semester students of the German language, the teacher training, and education faculty, Pattimura University. While the sample consisted of 37 students who took the Sprechfertigkeit 2 course. The research instruments were obtained through the pre-test and post-test, which were conducted to test and prove whether there was an effect of using the Kahoot! educational game on the learning outcomes of Sprechfertigkeit 2.

* 1. **Research instrument**

He test materials used in this study are included in the category of tests that have the best content validity and have been tested actually in measuring student learning outcomes through the pre-test (before using the "educational game" Kahoot!") and Post-test (after the application of the" educational game. "Kahoot!"),

* 1. **Research data analysis**

Data were processed and analyzed using the Wilcoxon comparison test. The results of the analysis of the reliability test with Cronsbachalpha above show that this analysis results = 0.764 > 0.60. Thus, it can be concluded that this instrument's testing is reliable because with n = 37, and the confidence level α. = 0.05, the value obtained from the table r = 0.764, so that the table alpha value > r cronbach.

Table 1. Reliability test

|  |  |  |
| --- | --- | --- |
| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
| .764 | .774 | 2 |

The normality test results by Kolmogorov Smirnov (table 2) show the results of Sig. (p-value), where p value> alpha (5%)

Table 2. Tests of normality

|  |  |  |  |
| --- | --- | --- | --- |
|  | Kolmogorov-Smirnova | | |
| Statistic | df | Sig. |
| Pre-Test | .132 | 37 | .103 |
| Post-Test | .133 | 37 | .095 |
| Lilliefors Significance Correction | | | |

This research design was a single group design with the application of pre-test and post-test. The implementation steps were as follows: First, the *Sprechfertigkeit* 2 lecture material was given to students without applying the steps of the educational game learning model "*Kahoot!*". The second was conducting a pre-test to measure the *Sprechfertigkeit* 2 ability. The third was providing learning materials for the *Sprechfertigkeit* 2 course by applying the educational game "*Kahoot!*" to students. The fourth was the implementation of the post-test. The pre-test and post-test results were analyzed using the test (T-test) to measure the difference between the 2 test results, with the following criteria: If the value of t > t table, it can be concluded that there is a significant difference between the pre-test and post-test.

1. **RESULTS AND DISCUSSION**

This study's data were data related to student learning outcomes, which were used as samples in the *Sprechfertigkeit* 2 course, before and after the application of the educational game learning model "*Kahoot!*," which was done through pre-test and post-test. In proving the research hypothesis, the research data were processed and analyzed using the Wilcoxon test to measure the difference between the learning outcomes of the 2 tests.

The results of the pre-test learning conducted showed that the value of 86 = 1 (one) student, the value of 84 = 3 (three) students, the value of 80 = 3 (three) students, the value of 83 = 1 (one) student and the value of 78 = 4 ( four) students, the value of 76 = 3 (three) students, the value of 74 = 2 (two) students, the value of 72 = 2 (two) students, the value of 70 = 1 (one) student, the value of 68 = 1 (one) student, the value 66 = 2 (two) students, 64 = 4 (four) students, 62 = 2 (two) students, 60 = 3 (three) students, 58 = 2 (two) students, and 56 = 3 ( three) students. From the data above, the highest score achieved was 86 by 1 (one) student, and the lowest score achieved was 56 by 3 (three) students. The average score obtained by students from the pre-test results was 70.43.Meanwhile, the results of the post-test learning showed that the value of 100 = 3 (three) students, the value of 98 = 2 (two) students, the value of 96 = 1 (one) student, the value of 94 = 2 (two) students, the value of 92 = 6 (six) students, score 90 = 5 (five) students, score 88 = 1 (one) student, score 86 = 4 (four) students, score 84 = 4 (four) students, score 82 = 1 (one) student, the value of 80 = 1 (one) student, the value of 78 = 3 (three) students, the value of 76 = 1 (one) student, and the value of 74 = 3 (three) students. The highest score achieved was 100 by 3 (three) students, and the lowest score achieved was 74 by 3 (three) students. The average score obtained by students from the post-test results = 87.67. Based on the pre-test and post-test learning result data above, the data was then processed and analyzed by the Wilcoxon test. The results of processing and data analysis with different Wilcoxon tests can be implemented in table 2 below.

Table 3. Summary item statistics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance | N of Items |
| Item Means | 79.054 | 70.432 | 87.676 | 17.243 | 1.245 | 148.665 | 2 |
| Item Variances | 73.072 | 58.114 | 88.030 | 29.916 | 1.515 | 447.481 | 2 |
| Inter-Item Covariances | 45.144 | 45.144 | 45.144 | .000 | 1.000 | .000 | 2 |
| Inter-Item Correlations | .631 | .631 | .631 | .000 | 1.000 | .000 | 2 |

Table 4. Comparative pre-post test paired sample t-test

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Paired Samples Statistics | | | | | |
|  | | Mean | N | Std. Deviation | Std. Error Mean |
| Pair 1 | Pre-test | 70.43 | 37 | 9.382 | 1.542 |
| Post-test | 87.68 | 37 | 7.623 | 1.253 |

Table 5. Paired Samples Correlations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | N | Correlation | Sig. |
| Pair 1 | Pre-Test & Post-Test | 37 | .631 | .000 |

Table 6. Paired samples test

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Paired Differences | | | | |  |  |  |
| Mean | Std. Deviation | Std.Error Mean | 95% Confidence Inteval of The Difference | |
| Lower | Upper | t | df | Sif.(2-Tailed) |
| Pair Pte-test-Posttes | -14.00000 | 9.32183 | 1.70193 | -17.48083 | -10.51917 | -8.226 | 29 | .000 |

The Paired Sample Test Table was the main output table showing the results of the tests carried out. This can be seen from the 2-tailed value in the table. The 2-tailed value of this case = 0.000 (p <0.05). Therefore, the results of the pre-test and post-test experience significant changes (meaningful). Data analysis (Table 3) shows that before applying the educational game learning model "*Kahoot!*," the value is 70.43. After the application of the "*Kahoot!*" education game, the value is 87.68. This difference shows a significant result, because the p-value <0.05 = p = 0.

Data analysis shows that the educational game "*Kahoot!*" positively affects learning outcomes in the *Sprechfertigkeit* 2 course. This proves that the application of the educational game "*Kahoot!*" was stable. This also improved students' understanding of the learning material delivered by the lecturer. This result was due to the application of the educational game "*Kahoot!*." Students learn independently and compete and are encouraged by lecturers to improve learning achievement because lecturers are learning "motivators" for students [30]. Learning with the educational game "*Kahoot!*" prioritizes independence and a competitive attitude to achieve learning goals by working independently and competing healthily. It is said that because "*Kahoot!*" educational game allows students to learn aggressively creatively, and not merely as an object of learning, but on the contrary as a subject of learning with maximum creativity and healthy competition in learning.

Besides, in expressing and actualizing the results of their thoughts in speaking German, students are more confident because of their enthusiasm to work independently and competitively. Thus, the application of the educational game "*Kahoot!*" has created a communicative, active, and competitive spirit among students. The application of the educational game "*Kahoot!*" helps students reduce or eliminate boredom in learning while providing positive values ​​to students to continue to encourage the results of their efforts in learning. Before applying the educational game "*Kahoot!*," student learning outcomes in the *Sprechfertigkeit* 2 course were very low because the learning methods applied did not vary. As a result, students felt bored and were not interested in learning, and were not motivated to study hard. Conversely, with the application of the educational game "*Kahoot!*," students are motivated to continue learning followed by continuous improvement in student learning outcomes, which is proved that the educational game "*Kahoot!*" has a significant impact or influence on student learning outcomes in the *Sprechfertigkeit* 2 course. The advantage of the educational game "*Kahoot!*" in the learning process is that the learning model of the educational game "*Kahoot!*" varies significantly in the application. Students are highly motivated, active, independent, excited, and competitive in solving learning problems. In the *Sprechfertigkeit* 2 course, the learning process carried out to maximize students' ability to understand and master German grammar well, master adequate German vocabulary, be able to pronounce German words well, dare to express opinions, and dare to actualize themselves to others.

Compared with the results of other relevant studies, this study's results do not show any significant differences. One example is the quasi-experiment in which students participated in technology-supported learning using PowToon, Blendspace, and *Kahoot!* perform significantly better on mean test scores in learning (p <.02) than those who followed traditional teaching [31]. Likewise, quasi-experiments in programming learning that examine the effects of traditional teaching vs gamified teaching using Who-Wants-To-Become-A-Millionaire, *Kahoot!* and Codeacademy programming [32] showed many positive effects for the gamified approach, including increased class attendance, less late arrivals to class, higher downloads of course material, better classroom dynamics, and higher final grade (61% for gamified vs. 53% for traditional). Another example is the quasi-experiment in which one group received traditional paper teaching, while the other received technology-supported learning using Voki, Buncee, *Kahoot!* and Answergarden [33]. Both groups did the same on the pre-test, but the technology-supported learning group performed significantly better on the post-test (90% score) than those on paper (75% score). Several studies investigated learning outcomes using *Kahoot!* only for teaching. Six are in the K-12 context (Elementary School, Middle School, and Senior High School), while the rest are with students. These studies are qualitative and quantitative, in which the majority can be classified as quasi-experimental. The study covers a wide range of fields and courses including language (English and Chinese), Information Technology, Bio-Engineering, Media and Communication, Electrical Circuits, Business, Mathematics, Physics, Chemistry, Animal Science, Academic Writing, Educational Technology, Nursing, Vocational Training, Programming, Control Systems, and Earth Sciences. Seventy percent of studies with tests of statistical significance on learning effects show that *Kahoot!* significantly improves final scores or test results compared to other teaching approaches. However, there are a few exceptions. In the experiment in the Information Technology course, *Kahoot!* did not result in a significantly increased learning effect than using the paper quiz and Clicker student response system [34]. Similar results were found in a quasi-experiment comparing *Kahoot!* and Survey Monkey in an experiment comparing PowerPoint and *Kahoot!* [35], A quasi-experiment in High School investigates the *Kahoot!* vs. traditional teaching [36], and in experiments comparing traditional teaching with Quizizz and *Kahoot!* (three experimental groups) [37]. In a study where *Kahoot!* was used to teach Mandarin, using *Kahoot!* had a significant increase in reading and speaking competence, but not listening or vocabulary [38]. Another experimental study showed a statistically significant increase in learning using *Kahoot!* in classroom teaching. These three studies focus on how to use *Kahoot!* in the flipped classroom to enhance learning. A post-test in a quasi-experiment in Taiwan with 44 students in an English course showed that the experimental group used *Kahoot!* had a mean score of 86.18 compared to 77.45 for the control group who was not using the *Kahoot!* (p = .007, high effect size) [39]. Likewise, another quasi-experiment about using *Kahoot!* in a flipped classroom shows that *Kahoot!* uses give significant improvement in speaking skills (p = .010, high effect) [39]. An Austrian study of a C programming course in which 60 students participated showed that grades increased by 12% after using *Kahoot!* in the context of an flipped classroom [40]. Quasi-experiment with 400 students in an Education technology course at the University of Florence was compared to traditional game-based teaching using *Kahoot!* through pre- and post-tests on theoretical and practical topics. The results showed that the use of *Kahoot!* had a significant increase from pre-to-test for all topics (p = .001, high effect), but if it is compared to the traditional approach, *Kahoot!* group, only performed significantly better on theoretical topics (p = .0001, small effect size) and not on more practical topics.

Another experiment with 96 students at Purdue University in the United States where *Kahoot!* was used for seven weeks. The finding showed that the experimental group performed significantly better on the final exam (79.56 for the experimental group vs. 56.83 for the control group) (p <.0001, the effect size is high). Likewise, the quasi-experimental results with 67 Greek university students studying electric circuits showed that the experimental group scored 59.93% vs. 51.72% for the control group (p = .001). A quasi-experiment among 98 nursing students at La Salle University examined how to include four 20-minute *Kahoot!* sessions will affect the final exam scores. The results showed that including this *Kahoot!* session had a significant impact on final examination scores (p = .005). A case study from Portugal with 324 university students shows that *Kahoot!* improved mean scores by 6.4% compared to traditional teaching, that weaker students improved their grades by 12%, and fewer students failed courses [41]. Likewise, middle and novice students in high schools in Taiwan learning Chinese had a significant improvement on the post-test using *Kahoot!* compared to other groups (p <.028) [42]. Another study showed 12% higher test results for college students playing *Kahoot!* compared with those exposed to traditional teaching (p = .039, low effect size) [43]. Then, the business course final exam scores with 96 students were, on average, 79.56 for students taught using *Kahoot!* compared with 56.83 for students who taught using traditional teaching (p <.0001, high effect size). There are also several other studies related to learning at *Kahoot!* However, it does not compare the effects of learning *Kahoot!* with another learning approach. One example is an article investigating how the learner is a leadership strategy. Students create and host their quizzes in *Kahoot!* affects the learning outcome [44]. The main finding was that the learner as leader strategy contributed to enhancing discussions in groups, especially for the leading group, and benefited those who acted as leaders. Another study showed that the number of *Kahoot!* quizzes the students played affected their final grade and a tendency that the more quizzes they had played - the better they performed on the final exam [45]. Likewise, an article investigated the relationship between the scores on *Kahoot!* games in a class and the final grade found a strong correlation between game performance and final grade (p = .005, high effect). A case study from Malaysia focused on how well *Kahoot!* supported Nicol and Milligan's principles for good feedback practice and found that *Kahoot!* fulfills four out of seven principles [46]. The identified feedback practices not fully supported in *Kahoot!* were 1) Ability to assist in clarifying what good performance is; 2) Ability to deliver high-quality information to students about their learning; and 3) Ability to encourage teacher and peer dialogue around learning. At last, there is a pilot study from South Korea with 51 university students that found *Kahoot!* improves vocabulary retention while fostering a positive learning environment and a meaningful learning experience.

1. **CONCLUSION**

The main conclusions of the studies described above suggest that *Kahoot!* can positively affect learning compared to other tools and approaches and various contexts and domains. This means that German student learning outcomes, especially in the *Sprechfertigkeit* 2 course with the *Kahoot!* Educational Games application, give excellent results because of various educational games in *Kahoot!* increase student learning outcomes so that students are very motivated, active, independent, passionate, and competitive in solving learning problems. Based on the results of statistical calculations, data analysis, discussion, and relevant research studies above, it is concluded that the educational game "*Kahoot!*" has a very significant effect on the learning outcomes of *Sprechfertigkeit* 2 German students. Likewise, the *Kahoot!* educational game can be recommended as a medium of learning in improving the quality of learning both in schools and colleges.

**REFERENCES**

[1] S. Gupta, S. Modgil, A. Gunasekaran, and S. Bag, “Dynamic capabilities and institutional theories for Industry 4.0 and digital supply chain,” *Supply Chain Forum*, vol. 21, no. 3, pp. 139–157, 2020, doi: 10.1080/16258312.2020.1757369.

[2] M. Pabbajah, I. Abdullah, R. N. Widyanti, H. Jubba, and N. Alim, “Student demoralization in education:The industrialization of university curriculum in 4.0.Era Indonesia,” *Cogent Educ.*, vol. 7, no. 1, pp. 0–14, 2020, doi: 10.1080/2331186X.2020.1779506.

[3] Kinshuk, N. S. Chen, I. L. Cheng, and S. W. Chew, “Evolution Is not enough: Revolutionizing Current Learning Environments to Smart Learning Environments,” *Int. J. Artif. Intell. Educ.*, vol. 26, no. 2, pp. 561–581, 2016, doi: 10.1007/s40593-016-0108-x.

[4] S. K. Tran, “GOOGLE: a reflection of culture, leader, and management,” *Int. J. Corp. Soc. Responsib.*, vol. 2, no. 1, pp. 1-14, 2017, doi: 10.1186/s40991-017-0021-0.

[5] M. Stehle, “Ghetto voices in contemporary German culture: Textscapes, filmscapes, soundscapes,” *Ghetto Voices Contemp. Ger. Cult. Textscapes, Film. Soundscapes*, no. April 2015, pp. 1–201, 2011, doi: 10.1080/03007766.2013.867671.

[6] M. Roca Lizarazu and J. Twist, “Rethinking community and subjectivity in contemporary german culture and thought,” *Oxf. Ger. Stud.*, vol. 49, no. 2, pp. 103–116, 2020, doi: 10.1080/00787191.2020.1785676.

[7] D. Hawes, “Precarious Times: temporality and history in modern german culture - competing germanies: nazi, antifascist and jewish theatre in German Argentina, 1933-1965,” *J. Contemp. Eur. Stud.*, vol. 28, no. 2, pp. 271–272, 2020, doi: 10.1080/14782804.2020.1736383.

[8] C. Diller, M. Kohl, and T. Thaler, “German-language spatial planning research between theory and practice,” *Plan. Pract. Res.*, vol. 00, no. 00, pp. 1–16, 2020, doi: 10.1080/02697459.2020.1829284.

[9] H. Oktadiana and P. L. Pearce, “The ‘bule’ paradox in Indonesian tourism research: issues and prospects,” *Asia Pacific J. Tour. Res.*, vol. 22, no. 11, pp. 1099–1109, 2017, doi: 10.1080/10941665.2017.1374987.

[10] Z. Dörnyei and K. Csizér, “The effects of intercultural contact and tourism on language attitudes and language learning motivation,” *J. Lang. Soc. Psychol.*, vol. 24, no. 4, pp. 327–357, 2005, doi: 10.1177/0261927X05281424.

[11] S. J. Litualy, “Integrative Teaching techniques and improvement of german speaking learning skills,” *J. Educ. Pract.*, vol. 7, no. 9, pp. 56–61, 2016.

[12] J. P. Stein, X. Lu, and P. Ohler, “Mutual perceptions of chinese and german students at a german university: stereotypes, media influence, and evidence for a negative contact hypothesis,” *Compare*, vol. 49, no. 6, pp. 943–963, 2019, doi: 10.1080/03057925.2018.1477579.

[13] K. Schröder, “Eight hundred years of modern language learning and teaching in the German-speaking countries of central Europe: a social history,” *Lang. Learn. J.*, vol. 46, no. 1, pp. 28–39, 2018, doi: 10.1080/09571736.2017.1382054.

[14] C. E. Holbrey, “Kahoot! Using a game-based approach to blended learning to support effective learning environments and student engagement in traditional lecture theatres,” *Technol. Pedagog. Educ.*, vol. 29, no. 2, pp. 191–202, 2020, doi: 10.1080/1475939X.2020.1737568.

[15] P. A. Baszuk and M. L. Heath, “Using Kahoot! to increase exam scores and engagement,” *J. Educ. Bus.*, vol. 95, no. 8, pp. 548–552, 2020, doi: 10.1080/08832323.2019.1707752.

[16] A. I. Wang and R. Tahir, “The effect of using Kahoot! for learning – A literature review,” *Comput. Educ.*, vol. 149, no. May 2019, p. 103818, 2020, doi: 10.1016/j.compedu.2020.103818.

[17] D. Orhan Göksün and G. Gürsoy, “Comparing success and engagement in gamified learning experiences via Kahoot and Quizizz,” *Comput. Educ.*, vol. 135, no. October 2018, pp. 15–29, 2019, doi: 10.1016/j.compedu.2019.02.015.

[18] S. M. Jones *et al.*, “A ‘KAHOOT!’ Approach: the effectiveness of game-based learning for an advanced placement biology class,” *Simul. Gaming*, vol. 50, no. 6, pp. 832–847, 2019, doi: 10.1177/1046878119882048.

[19] S. Brooks, K. Dobbins, J. J. A. Scott, M. Rawlinson, and R. I. Norman, “Learning about learning outcomes: The student perspective,” *Teach. High. Educ.*, vol. 19, no. 6, pp. 721–733, 2014, doi: 10.1080/13562517.2014.901964.

[20] K. Dobbins *et al.*, “Studies in Higher Education Understanding and enacting learning outcomes : the academic ’ s perspective,” Studies in Higher Education., vol. 41, no. 7, pp. 1217-1235, 2016, doi: 10.1080/03075079.2014.966668.

[21] L. Lassnigg, “‘Lost in translation’: Learning outcomes and the governance of education,” *J. Educ. Work*, vol. 25, no. 3, pp. 299–330, 2012, doi: 10.1080/13639080.2012.687573.

[22] H. Coates, “Assessing student learning outcomes internationally: insights and frontiers,” *Assess. Eval. High. Educ.*, vol. 41, no. 5, pp. 662–676, 2016, doi: 10.1080/02602938.2016.1160273.

[23] S. Bohlinger, “Quali fi cations frameworks and learning outcomes : challenges for Europe ’ s lifelong learning area,” vol. 25, no. 3, pp. 279–297, 2012.

[24] Z. Sun, C. H. Lin, J. You, H. jiao Shen, S. Qi, and L. Luo, “Improving the english-speaking skills of young learners through mobile social networking,” *Comput. Assist. Lang. Learn.*, vol. 30, no. 3–4, pp. 304–324, 2017, doi: 10.1080/09588221.2017.1308384.

[25] T. Uchihara and J. Clenton, “Investigating the role of vocabulary size in second language speaking ability,” *Lang. Teach. Res.*, vol. 24, no. 4, pp. 540–556, 2020, doi: 10.1177/1362168818799371.

[26] H. Guo and M. Pilz, “A comparative study of teaching and learning in German and Chinese vocational education and training schools: A classroom observation study,” *Res. Comp. Int. Educ.*, vol. 15, no. 4, pp. 391–413, 2020, doi: 10.1177/1745499920959150.

[27] C. M. Plump and J. LaRosa, “Using Kahoot! in the classroom to create engagement and active learning: a game-based technology solution for elearning novices,” *Manag. Teach. Rev.*, vol. 2, no. 2, pp. 151–158, 2017, doi: 10.1177/2379298116689783.

[28] P. Bawa, “Using Kahoot to Inspire,” *J. Educ. Technol. Syst.*, vol. 47, no. 3, pp. 373–390, 2019, doi: 10.1177/0047239518804173.

[29] S. A. Licorish, H. E. Owen, B. Daniel, and J. L. George, “Student perception Kahoot,” *Res. Pract. Technol. Enhanc. Learn.*, vol. 13, no. 9, pp. 1–24, 2018.

[30] K. E. Cameron and L. A. Bizo, “Use of the game-based learning platform KAHOOT! to facilitate learner engagement in animal science students,” *Res. Learn. Technol.*, vol. 27, no. May, 2019, doi: 10.25304/rlt.v27.2225.

[31] N. Sarkar, W. Ford, and C. Manzo, “Engaging digital natives through social learning,” *ICSIT 2017 - 8th Int. Conf. Soc. Inf. Technol. Proc.*, vol. 2017-March, no. 2, pp. 178–182, 2017.

[32] P. Fotaris, T. Mastoras, R. Leinfellner, and Y. Rosunally, “Climbing up the leaderboard: An empirical study of applying gamification techniques to a computer programming class,” *Electron. J. e-Learning*, vol. 14, no. 2, pp. 94–110, 2016.

[33] B. G. İlter, “How does Technology Affect Language Learning Process at an Early Age?,” *Procedia - Soc. Behav. Sci.*, vol. 199, pp. 311–316, 2015, doi: 10.1016/j.sbspro.2015.07.552.

[34] J. Murciano-Calles, “Use of Kahoot for assessment in chemistry education: a comparative study,” *J. Chem. Educ.*, vol. 97, no. 11, pp. 4209–4213, 2020, doi: 10.1021/acs.jchemed.0c00348.

[35] M. Stoyanova, D. Tuparova, and K. Samardzhiev, “Impact of motivation, gamification and learning style on students’ interest in maths classes – a study in 11 high school grade,” *Adv. Intell. Syst. Comput.*, vol. 716, pp. 133–142, 2018, doi: 10.1007/978-3-319-73204-6\_17.

[36] C. C. Lee, Y. Hao, K. S. Lee, S. C. Sim, and C. C. Huang, Investigation of the effects of an online instant response system on students in a middle school of a rural area, ” Computers in Human Behaviorvol., Vol. 97, pp. 217-223, 2019. doi:[10.1016/j.chb.2018.11.034](https://doi.org/10.1016/j.chb.2018.11.034)

[37] M. C. Prieto, L. O. Palma, P. J. B. Tobías, and F. J. M. León, “Student assessment of the use of kahoot in the learning process of science and mathematics,” *Educ. Sci.*, vol. 9, no. 1, 2019, doi: 10.3390/educsci9010055.

[38] C. G. Ruiz, “The effect of integrating Kahoot! and peer instruction in the Spanish flipped classroom: the student perspective,” *J. Spanish Lang. Teach.*, vol. 8, no. 1, pp. 63–78, 2021, doi: 10.1080/23247797.2021.1913832.

[39] H. T. Hung, “Clickers in the flipped classroom: bring your own device (BYOD) to promote student learning,” *Interact. Learn. Environ.*, vol. 25, no. 8, pp. 983–995, 2017, doi: 10.1080/10494820.2016.1240090.

[40] H. N. Mok, “Teaching tip: The flipped classroom,” *J. Inf. Syst. Educ.*, vol. 25, no. 1, pp. 7–11, 2014.

[41] M. Esteves, A. Pereira, N. Veiga, R. Vasco, and A. Veiga, “The Use of New Learning Technologies in Higher Education Classroom: A Case Study,” *Adv. Intell. Syst. Comput.*, vol. 715, no. 2, pp. 499–506, 2018, doi: 10.1007/978-3-319-73210-7\_59.

[42] I. N. Asniza, M. O. S. Zuraidah, A. R. M. Baharuddin, Z. M. Zuhair, and Y. Nooraıda, “Online game-based learning using kahoot! to enhance pre-university students’ active learning: a students’ perception in biology classroom,” *J. Turkish Sci. Educ.*, vol. 18, no. 1, pp. 145–160, 2021, doi: 10.36681/tused.2021.57.

[43] F. A. A. Elkhamisy and R. M. Wassef, “Innovating pathology learning via Kahoot! game-based tool: a quantitative study of students` perceptions and academic performance,” *Alexandria J. Med.*, vol. 57, no. 1, pp. 215–223, 2021, doi: 10.1080/20905068.2021.1954413.

[44] S. Ebadi, R. Rasouli, and M. Mohamadi, “Exploring EFL learners’ perspectives on using Kahoot as a game-based student response system,” *Interact. Learn. Environ.*, vol. 0, no. 0, pp. 1–13, 2021, doi: 10.1080/10494820.2021.1881798.

[45] Á. Tóth, P. Lógó, and E. Lógó, “The effect of the kahoot quiz on the student’s results in the exam,” *Period. Polytech. Soc. Manag. Sci.*, vol. 27, no. 2, pp. 173–179, 2019, doi: 10.3311/PPso.12464.

[46] S. Pfirman, L. Hamilton, M. Turrin, C. Narveson, and C. A. Lloyd, “Polar knowledge of US students as indicated by an online Kahoot! quiz game,” *J. Geosci. Educ.*, vol. 69, no. 2, pp. 150–165, 2021, doi: 10.1080/10899995.2021.1877526.