Multimedia Mobile Application to Improve the Academic Achievement of Fifth Grade Elementary School Students in Physical Education Classes

Sri Nuraini[1*], Taufik Rihatno[2], Resha Putri Fadhilla[3], Arita Marini[4], Julius Sagita[5], Desy Safitri[6], Leola Dewiyani[7] iD

[1,3,3,4,5,6,7] Jakarta State University, Indonesia

ABSTRAK

Kurangnya minat siswa dalam belajar berdampak pada hasil belajar siswa yang rendah. Salah satu faktor yang menyebabkan rendahnya hasil belajar siswa yaitu kurangnya media pembelajaran. Tujuan penelitian ini yaitu menguji pengaruh aplikasi seluler multimedia untuk meningkatkan prestasi akademik siswa kelas V SD pada kelas pendidikan jasmani. Jenis penelitian ini yaitu penelitian kuantitatif dengan menggunakan desain eksperimen. Populasi dalam penelitian ini yaitu siswa kelas V SD yang berjumlah 112 siswa. Penelitian ini mengambil sampel secara acak dengan menggunakan rumus Slovin. Metode yang digunakan untuk mengumpulkan data yaitu kuesioner dan tes. Instrumen yang digunakan untuk mengumpulkan data yaitu lembar kuesioner dan soal tes. Teknik analisis data yang digunakan untuk menganalisis data yaitu statistik inferensial. Hasil penelitian ini yaitu hasil uji-t menunjukkan adanya pengaruh penggunaan Mobile Apps dalam kegiatan pembelajaran. Dapat disimpulkan bahwa penggunaan Mobile Apps dalam kegiatan pembelajaran dapat meningkatkan prestasi akademik siswa pada pendidikan jasmani kelas V. Implikasi penelitian ini yaitu penggunaan Mobile Apps dalam kegiatan pembelajaran dapat memudahkan siswa dalam belajar.

ABSTRACT

Lack of student interest in learning has an impact on low student learning outcomes. One of the factors that causes low student learning outcomes is the lack of learning media. This research aims to examine the effect of multimedia mobile applications to improve the academic achievement of fifth grade elementary school students in physical education classes. This type of research is quantitative research using an experimental design. The population in this study was 112 grade V elementary school students. This research took samples randomly using the Slovin formula. The methods used to collect data are questionnaires and tests. The instruments used to collect data were questionnaire sheets and test questions. The data analysis technique used to analyze the data is inferential statistics. The results of this research, namely the t-test results, show that there is an influence of the use of mobile Apps in learning activities. It can be concluded that the use of mobile Apps in learning activities can improve students' academic achievement in class V physical education. This research implies that the use of mobile Apps in learning activities can make it easier for students to learn.

1. INTRODUCTION

Education must be able to improve students' ability to adapt to existing technological advances. In carrying out teaching and learning activities, students have different interests related to the subjects being taught. The implementation of online learning due to the COVID-19 pandemic has had a significant impact on optimizing learning (Prabawa & Restami, 2020; Wiradarma et al., 2021). The existence of a pandemic certainly requires schools to prepare and implement strategies that can help students deal with this impact. One of them is transferring face-to-face learning methods to online learning (Imani & Raharjo, 2021; Salsabila et al., 2020; Wulandari & Agustika, 2020). Technological developments help and motivate teachers to be creative in delivering interactive learning (Dwirahayu & Afidah, 2021; Oh, 2019). Interactive learning itself can increase learning efficiency and make learning activities more enjoyable. Technology appears as a facilitator in delivering learning material. Reforms such as incorporating mobile learning into education can increase students' interest in learning and teacher creativity in using technology. In addition, interactive media increases students' digestibility of the material presented. Thus, interactive media makes it easier for students to understand learning concepts (Ariyantini & Tegeh, 2022; Astri et al., 2022).

However, in reality, students experience a decline in learning outcomes due to a lack of interest in learning, they tend to be lazy about studying because of a lack of interaction with the school environment. The obstacles experienced by teachers in cultivating and increasing students' interest in learning are still found in elementary school learning (Haryati et al., 2021). Increasing students' interest in learning requires efforts from teachers to design learning that can foster students' willingness to learn (Fitriani & Negara, 2021). Online learning is less effective if used long term. Basically, students understand and support the distance learning policy as an effort to break the chain of spread of the corona virus. Some students still complain that the assignments given by lecturers are considered burdensome to students, the learning time often exceeds the learning schedule, and the lack of motivation given by lecturers to students during online learning.(Nopiyanto & Ibrahim, 2021; Wulandari & Agustika, 2020).Apart from that, the implementation of online learning carried out at various universities is hampered by IT, because not all teachers understand the use of sophisticated technology. Therefore, teachers inevitably have to be prepared for the demands of learning during this pandemic. The research results show that around 63.9% of students who often use smartphones for education generally use websites. In contrast, the use of applications to support learning is rare, only around 7.2% of students use them; the rest rarely or never. Therefore, an interactive media development design in the form of learning applications is needed to increase this percentage. This design can help facilitate and improve the quality of goal achievement.

Solutions to overcome problems using learning applications. Learning applications can also increase student motivation to take part in learning activities. Not only that, the application of learning also plays a role in improving students' cognitive aspects. With this good impact, their interest in learning activities increases. Utilizing Mobile Apps in learning means involving mobile technology to support learning(Nizar et al., 2023; Tommerdahl et al., 2022). The existence of mobile applications can improve the learning process and efficiency because students can learn anywhere and at any time. Parents also find it easier to see their children's progress in using technology (Mirzakhmedova et al., 2023; Pilar et al., 2013). Mobile applications are efficiently used as learning materials and tools that meet the needs of teachers and students and can support the achievement of positive learning outcomes (Tilova et al., 2022). So, students can more easily understand concepts and be more consistent in learning. Mobile-based learning is material that provides more motivation to participate in learning activities. So, it has a good impact on academic achievement, increasing students' understanding of the learning process. It is based on elements related to playing and having fun. Mobile applications have a fun approach that can arouse students' interest and enjoyment in the learning process so that students' academic achievements can improve automatically (Putra et al., 2022; Voshaar et al., 2023). Mobile applications are suitable for providing a wider range of educational services.

Previous research findings stated that the application of Mobile Applications in learning activities is a means of forming student competencies (Mirzakhmedova et al., 2023). Mobile Apps also play a role in carrying out the duties of educational institutions by developing student independence to seek new knowledge and skills that are more effective, flexible and contextual so that the learning process becomes enjoyable (Voshaar et al., 2023). The students felt they received diverse learning. Mobile applications are known as innovative tools to improve the quality of learning, from critical thinking and communication skills to problem solving skills (Wati, 2022). So, it can be seen that Mobile Apps make it easier for students to study and do assignments because they use the media they like. Different from previous research, Mobile Apps are equipped with learning evaluations. After the learning evaluation is answered, students can see directly the grades obtained according to their abilities. In this research students can use the application online or offline. In this way, students can be actively involved in learning activities without network constraints. This mobile application can train students to study independently because it can be used anytime and anywhere, making it easier for parents to monitor their children studying at home. This multimedia mobile application can be accessed by teachers and students because it is interactive and not challenging. This research aims to test the effect of multimedia mobile applications to improve the academic achievement of fifth grade elementary school students in physical education classes in Koto IV District, Agam Regency, West Sumatra.

2. METHODS

This research uses an experimental design. The experimental group was given Mobile Apps in learning activities, while the control group did not use Mobile Apps in learning activities or did not apply special treatment. The population and sample of this research involved fifth grade elementary school students in IV Koto District, Agam Regency, West Sumatra who were used as the population. This study took random samples using the Slovin formula involving 112 students for the experimental and control groups. The methods used to collect data are questionnaires and tests. The questionnaire method is used

to collect data regarding learning activities carried out by students in the classroom. The test method is used to collect data in the form of student learning outcomes after being given Mobile Apps in learning activities. The instruments used to collect data were questionnaire sheets and test questions. This research uses a posttest instrument related to student academic achievement. After receiving treatment, a posttest was given to the experimental group, while the control group was used as a comparison group to determine the effect shown. The data analysis technique used to analyze the data is inferential statistics. Data analysis in this study used the normality test. The Kolmogorov-Smirnov test was carried out to test the normality of data distribution. Meanwhile, Levene's test was carried out for data homogeneity. In this research the t test uses inferential statistics to test the hypothesis. Hypothetical conclusions can be drawn using criteria, namely a significance level of 0.05. The null hypothesis is rejected if the test statistic is more extreme than the critical value. Conversely, if the test is less severe, then the null hypothesis is accepted.

3. RESULT AND DISCUSSION

Results

This research aims to test the effect of multimedia mobile applications to improve the academic achievement of fifth grade elementary school students in physical education classes in Koto IV District, Agam Regency, West Sumatra. Before testing the hypothesis, a normality test and homogeneity test are carried out. The results of the normality test show a significance value of <0.005 so that the data is normally distributed. The homogeneity test results are <0.005 so the data is homogeneous. The results of data analysis show that the results of the t-test are that there is a significant influence on the learning outcomes of the experimental class that received treatment using Mobile Apps and the control class that did not receive treatment. Therefore, the null hypothesis is rejected based on the t-test data. Independent sample test results are presented in Table 1.

Table 1. T-test results

		Equality of Variance		t-test for Quality Means					
		F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Learning outcomes	Equal variances assumed	0.007	0.932	6.023	222	0.000	10.893	7.328	14.457
	Equal variances not assumed			6.023	221.801	0.000	10.893	7.328	14.457

Based on t-test data, the use of Mobile Apps in learning activities can improve students' academic achievement in class V physical education in IV Koto District, Agam Regency, West Sumatra.

Discussion

The results of the research show that the use of Mobile Apps in learning activities can improve students' academic achievement in class V physical education in IV Koto District, Agam Regency, Sumatra. This learning media was developed using the Smart Apps Creators application. Applications are applications that are commonly used, one of which is to create simple learning applications (Pilar et al., 2013; Tommerdahl et al., 2022). Smart Apps Creators can be accessed via a laptop or computer, while the resulting applications can be accessed on any type of smartphone, depending on the style the creator chooses (Nafisah & Ghofur, 2020). In mobile manufacturing, research apps use several features that can display videos and images related to the material I provide. Interactive mobile application where participants can determine the desired learning steps according to directions. On mobile apps, researchers provide questions as material for evaluating student learning. The questions given are in the form of multiple choice and essays. Students can click the "play" button on the cover page to start the mobile application. On the next page there is a menu display. This menu display makes it easier for students to continue to the next learning stage. On the next page there are learning materials and learning videos. The material page also has animations that can increase students' interest in learning. On the material page there are also back and next buttons; these buttons can make it easier for students to quickly switch to another page. A quiz consisting of 15 multiple choice questions and five essay questions is on the next

page. The quiz is carried out based on a predetermined number sequence. After the student has finished taking the exam, the score will automatically come out according to the student's ability to answer the quiz. Apart from that, using Mobile Apps also makes learning more fun; Not only can they access the app during class time, but they can access the learning app whenever they want. This research can strengthen previous research; This research can clarify that the application of Mobile Apps can improve academic achievement in physical education learning for grade 5 elementary school students (Nizar et al., 2023; Tommerdahl et al., 2022). This finding is strengthened by previous research findings which state that Mobile Apps can improve students' academic achievement (Ardiansyah & Nana, 2020). Student academic achievement increases because the use of Mobile Apps attracts students' interest in learning. Students can access this mobile application freely wherever and whenever they need it. The implication of this research is that the use of Mobile Apps in learning activities can make it easier for students to learn.

4. CONCLUSION

Learning using multimedia mobile applications, there are differences in student academic achievement in class V physical education learning in IV Koto District, Agam Regency, West Sumatra. The difference is obvious; It can be seen that the use of Mobile Apps in learning activities has a positive impact on the academic achievement of fifth grade elementary school students in IV Koto District, Agam Regency, West Sumatra. It is recommended that educators provide more innovation in learning activities, one of which is using technology as creatively as possible. It is hoped that further research can further develop mobile applications with other more innovative features and further expand the reach of research.

5. REFERENCES

Ardiansyah, AA, & Nana, N. (2020). The role of mobile learning as innovation in improving student learning outcomes in school learning. Indonesian Journal of Educational Research and Review, 3(1), 47–56. https://doi.org/10.23887/ijerr.v3i1.24245.

Ariyantini, KY, & Tegeh, IM (2022). Powerpoint Assisted Interactive Learning Media in Subtheme 1 My Living Environment Theme 8. Journal of Pedagogy and Learning, 5(2), 250–259. https://doi.org/10.23887/JP2.V5I2.47146.

Astri, NKD, Wiarta, IW, & Wulandari, IGAA (2022). Development of Interactive Multimedia Based on a Contextual Approach in Mathematics Subjects, the Subject of Flat Figures. Journal of Education and Counseling (JPDK), 4(3), 575–585. https://doi.org/10.31004/JPDK.V4I3.4371.

Dwirahayu, G., & Afidah, A. (2021). Multimedia Assisted Analogy: Learning Approach to Developing Mathematical Representation Skills. JPI (Indonesian Education Journal), 10(1), 117–127. https://doi.org/10.23887/jpi-undiksha.v10i1.24371.

Fitriani, NMAD, & Negara, IGAO (2021). Development of an Online Science Learning Application on the Subject of Human Movement Organs. MIMBAR PGSD Undiksha, 9(1), 82–92. https://doi.org/10.23887/jjpgsd.v9i1.31989.

Haryati, S., Rizal, F., & Syah, N. (2021). Improving Learning Outcomes for Vocational Secondary Students Through Mobile Learning. Undiksha Edutech Journal, 9(1), 31–39. https://doi.org/10.23887/jeu.v9i1.31896.

Imani, AT, & Raharjo, HP (2021). Interest and Movement Activities of SMP N 2 Kandangan Students in Online Physical Education Learning During the Covid-19 Pandemic. Indonesian Journal for Physical Education and Sport, 2(2), 465–470. https://doi.org/10.15294/INAPES.V2I2.45457.

Mirzakhmedova, K. V, Omonov, QS, Rikhsiyeva, GS, Nasirova, SA, Khashimova, SA, & Khalmurzaeva, NT (2023). Use of Mobile Applications in Establishing Inclusive Education in Pedagogy. Journal of Law and Sustainable Development, 11(12), e2376–e2376. https://doi.org/10.55908/sdgs.v11i12.2376.

Nafisah, D., & Ghofur, A. (2020). Development of Android-Based Barcode Scan Learning Media in Social Sciences Learning. EduTeach: Journal of Education and Learning Technology, 1(2), 144–152. https://doi.org/10.37859/eduteach.v1i2.1985.

Nizar, MN, Utomo, DH, Putra, AK, & Soelistijo, D. (2023). Development of Mobile Apps "Stunami" on Disaster Mitigation Material. Edu Geography, 11(1), 27–41.

Nopiyanto, YE, & Ibrahim, I. (2021). Student Interest in Learning in Sports Philosophy Courses During the Covid-19 Pandemic. Journal of Education And Development, 8(3), 177–181. https://doi.org/10.37081/ed.v9i3.2773.

Oh, E. (2019). Research on the effectiveness of peer instruction and students' involvement. Asia-Pacific of Multimedia Services Convergent with Art Humanities, and Sociology, 9, 199–208. https://doi.org/https://doi.org/10.35873/ajmahs.

Pilar, R.A., Jorge, A., & Cristina, C. (2013). The use of current mobile learning applications in EFL. Procedia-Social and Behavioral Sciences, 103, 1189–1196. https://doi.org/10.1016/j.sbspro.2013.10.446.

Prabawa, DGAP, & Restami, MP (2020). Development of Thematic Multimedia Using a Scientific Approach for Elementary School Students. MIMBAR PGSD Undiksha, 8(3), 479–491. https://doi.org/10.23887/jjpgsd.v8i3.28970.

Putra, AK, Purwanto, Islam, MN, Hidayat, WN, & Fahmi, MR (2022). Development of Mobile Virtual Field Trips in Ijen Crater Geosites Based on 3600 Auto Stereoscopic and Geospatial Technology As Geography Learning Media. Geojournal of Tourism and Geosites, 41(2), 456–463. https://doi.org/10.30892/GTG.41216-850.

Salsabila, UH, Sari, LI, Lathif, KH, Lestari, AP, & Ayuning, A. (2020). The Role of Technology in Learning During the Covid-19 Pandemic. Al-Mutharahah: Journal of Social Religious Research and Studies, 17(2), 188–198. https://doi.org/10.46781/AL-MUTHARAHAH.V17I2.138.

Tilova, SN, Amini, R., Guru, P., Basis, S., Ilmu, F., University, P., & Padang, N. (2022). Development of Integrated Thematic Teaching Materials Using the RADEC-Based Flip PDF Corporate Application in Class V Elementary School. Journal of Basic Education Studies, 5(1), 1110.

Tommerdahl, J.M., Dragonflame, C.S., & Olsen, A.A. (2022). A systematic review examining the efficacy of commercially available foreign language learning mobile apps. Computer Assisted Language Learning, 1–30. https://doi.org/10.1080/09588221.2022.2035401.

Voshaar, J., Knipp, M., Loy, T., Zimmermann, J., & Johannsen, F. (2023). The impact of using a mobile app on learning success in accounting education. Accounting Education, 32(2), 222–247. https://doi.org/10.1080/09639284.2022.2041057.

Wati, M. (2022). The Influence of the Problem Based Learning Model Assisted by Mobile Learning Media on the Mathematics Collaboration Ability of Fourth Grade Elementary School Students. Indonesian Journal of Educational Science (IJES), 5(1), 56–64. https://doi.org/10.31605/ijes.v5i1.1834.

Wiradarma, KS, Suarni, NK, & Renda, NT (2021). Analysis of the Relationship between Learning Interest and Online Science Learning Outcomes for Class III Elementary School Students. MIBAR PGSD Undiksha, 9(3), 408–415. https://doi.org/10.23887/jjpgsd.v9i3.39212.

Wulandari, A., & Agustika, GNS (2020). Dramatic Online Learning During the Covid-19 Pandemic. Pulpit PGSD Undiksha, 8(3), 515–526. https://doi.org/10.23887/jjpgsd.v8i3.29259.