



Augmented Reality Technology and Social Support on Student Learning Outcomes with Motivation as an Intervening Variable

Solehan Arif⁽¹⁾, Abdul Hamim⁽²⁾, Nuri Wahda Salsabila Usmany⁽³⁾

⁽¹⁾, SDN Toket 2, ⁽²⁾, SDN Jambringin 1, ⁽³⁾ Institut Agama Islam Negeri Madura

⁽¹⁾ solehan81arif@gmail.com, ⁽²⁾ hamimteja828@yahoo.com, ⁽³⁾ nuriusmany73@gmail.com

Article Info

History Article

Received: September 25, 2024

Revised: January 29, 2025

Accepted: February 14, 2025

Keywords

Augmented Reality; Learning Outcomes; Learning Motivation; Intervening Variables.

Abstract

AR technology as an introduction to learning promises the effectiveness of the learning carried out, this makes it possible to test the technology to ensure whether the technology and the help of social support are able to have an impact on the development of learning outcomes and learning motivation. This study aims to investigate the influence of (1) Augmented Reality (AR) technology on learning motivation, (2) social support on learning motivation, and (3) AR technology on student learning outcomes through learning motivation. This study uses quantitative research with a basic research type, the population used is grade 6 students in Gugus 7, Proppo District, Pamekasan Regency, which consists of 5 schools, including: SDN Toket 1 with 35 students, SDN Toket 2 with 20 students, SDN Samiran 2 as many as 7 students, SDN Samiran 3 as many as 14 students with a total of 88 respondents. This quantitative study employs an associative approach to examine the relationships between variables. Data were collected using a questionnaire from 72 respondents. The findings are: (1) AR technology does not significantly influence learning motivation, (2) social support does not significantly affect learning motivation, and (3) AR technology does not influence learning outcomes through learning motivation.

2025 Institut Agama Islam Negeri Madura

✉ Address:

Tadris Ilmu Pengetahuan Sosial Department,
Institut Agama Islam Negeri Madura, Indonesia.
E-mail: sociale@iainmadura.ac.id

E-ISSN: 3047-1885

<https://doi.org/10.19105/sociale.v2i1.15503>



Introduction

Education is basically a conscious effort to develop the potential of human resources in students by supporting and facilitating their learning activities. (Permana et al., 2024) . Education is a process of forming individual character that allows the development and utilization of all potential and resources that they have. The role of education is very important in producing quality human resources. Without education, humans will be left behind and have difficulty developing. Education is an effort by every citizen to improve intelligence, skills, and abilities. The key factor in achieving these goals is teachers or teaching staff. (Hapudin & Praja, 2022) .

The importance of the role of education in improving the quality of education in Indonesia is reflected in its efforts to improve the quality of human resources. An equitable and quality education system in a country secures the country's human resources and enables it to compete globally. In the era of Society 5.0, technology is no longer limited by space and time, it continues to develop rapidly. Technological advances facilitate learning and knowledge acquisition that can be accessed anytime and anywhere as long as it is connected to the internet. (Qadir et al., 2020) .

In the 21st century, the world of education has undergone significant evolution with the entry of technology into various aspects of life. This century is known as the century of knowledge, widespread dissemination of information, and rapid technological progress. This development opens up opportunities to present quality education through human and technological media. With advances in information and communication technology, learning media now plays a central role in the teaching and learning process, not only as an aid. Learning media plays an important role in increasing the effectiveness and efficiency of learning activities. (Zuana & Aziz, 2023) .

One of the main challenges in helping students absorb learning materials is presenting them in a form that is interesting and can increase their engagement. This becomes even more important when we consider the fact that students tend to prefer visual media over oral or written media. Therefore, creative solutions are

needed that utilize technology to improve students' ability to absorb learning materials. (Banjarani & Ridwan, 2023) .

With the advancement of information and communication technology, *Augmented Reality* (AR) has become a promising medium in improving the quality of learning. AR allows users to see objects or people digitally in images that appear to exist in the real world. For example, in Social Studies lessons on historical development material, AR can be used to visualize historical buildings and artifacts, so that students can experience firsthand how these things looked in the past. (Arrofa Acesta & Nurmaylany, 2018) . In addition to interesting learning media, social support is also an important factor in increasing student motivation and learning outcomes. Social support is assistance or help from individuals who have close social ties with the recipient of assistance (Arista, 2024) .

The results of field observations show it was found that these schools had implemented interesting and enjoyable learning methods. They utilize technology in the learning process, such as the use of *augmented reality* in learning, especially in Social Sciences subjects. In addition, social support from teachers and parents greatly helps students' education, thus increasing their learning motivation and ultimately having a positive impact on their learning outcomes. The reason for choosing this title is because *Augmented Reality* (AR) technology offers an innovative and interactive learning method, which can improve students' understanding and interest in Social Sciences subjects. In addition, learning motivation is an important factor that influences student learning outcomes. By making learning motivation an intervening variable, this study can explore how AR and social support indirectly influence learning outcomes through increasing learning motivation.

Based on these facts and descriptions, the researcher is interested in choosing School Cluster 7, Proppo District, Pamekasan Regency as the research location because... It was found that these schools have facilities and infrastructure that support the implementation of AR technology. This makes it the right location for this study. In addition, these schools show a high interest and commitment to improving learning methods and are open to technological innovation, which

supports the smooth implementation of the study. These conditions provide a specific context that is relevant to understanding the application of AR technology and social support in educational environments that may not have been exposed to this technology. Therefore, the researcher chose the location in Elementary Schools in Cluster 7, namely to explore the application of modern technology in education and understand the social factors that influence student learning outcomes. This study is not only relevant to improving the quality of education in Pamekasan, but also provides a broader contribution in developing effective learning strategies in various educational contexts.

Previous studies have been conducted by Husanaldi (Husanaldi, 2023) and (Banjarani & Ridwan, 2023) . Based on the findings of previous studies, it can be concluded that although this study is a continuation of previous studies and is not the first study, there are significant differences. The difference lies in learning motivation as an intervening variable that is influenced by the independent variable but affects the dependent variable (*Intervening*) which was not studied by previous researchers, so this study is interesting to study and reveal further, in order to obtain an overview of the effect of the use of *Augmented Reality technology* and social support on student learning outcomes with learning motivation as an intervening variable in the subject of Social Sciences for Class 6 in Cluster 7, Proppo District, Pamekasan Regency .

Method

This study uses a quantitative research method with basic research . *Basic research* is a study that has intellectual reasons to expand human knowledge , not to create or make products (Siregar, 2015) . With this research, a theory can be built that can function to explain, predict and control a symptom that occurs. The associative referred to in this study is whether or not there is an influence of the use of *Augmented Reality* technology and social support on student learning outcomes in social studies subjects with learning motivation as an intervening variable for Class 6 in Cluster 7, Proppo District, Pamekasan Regency.

The population in this study were 6th grade students in Cluster 7, Proppo District, Pamekasan Regency, consisting of 5 Elementary Schools, namely, Karangayar State Elementary School (12 students), Toket 1 State Elementary School (35 students), Toket 2 State Elementary School (20 students), Samiran 2 State Elementary School (7 students), Samiran 3 State Elementary School (14 students). So the population in this study was 88 students or respondents. The sampling technique used is *simple random sampling*, which is called simple because sample members are selected randomly without considering strata or levels in the population.

So the sample used in this study was 72 respondents with the division for each school as seen in the table below.

No	School name	Frequency
1	Karang Anyar State Elementary School	14 students
2	Samiran 2 State Elementary School	14 students
3	Samiran 3 State Elementary School	14 students
4	Toket 1 Public Elementary School	15 students
5	Toket 2 Public Elementary School	15 students
Total		72 students

The table above shows that there were 72 respondents with the following details: 14 students at SDN Karanganyar, 14 students at SDN Ssamiran 2, 14 students at SDN Samiran 3, 15 students at SDN Toket 1 and 15 students at SDN Toket 2.

Results and Discussion

The Influence of Using *Augmented Reality Technology* on Learning Motivation

Based on the results of the research conducted, it was found that the direct influence of the *Augmented Reality variable* on learning motivation has a significance value of 0.089. Because this value is greater than 0.05, it can be concluded that the alternative hypothesis (H1) is rejected, which means that there is no significant influence between the use of *Augmented Reality* (X1) and learning motivation (Z). However, although the effect is not statistically significant, the unstandardized coefficients (B) value shows a figure of 0.363 with a positive

direction. This means, practically, if the use of *Augmented Reality* is increased by one unit, learning motivation will increase by 0.363 units .

So is the research (Fajar, 2020) , Shows that there is an effect of the use of *augmented reality media* on the motivation and learning outcomes of students in plant tissue material in class XI of SMA Negeri 7 Tasikmalaya City in the 2019/2020 academic year. This difference in results may be due to variations in research methodology, sample characteristics, or different learning contexts. Although the results of this study indicate that the use of *Augmented Reality* (AR) does not significantly affect learning motivation based on statistical tests (with a significance value of 0.089 which is greater than 0.05), this does not mean that AR has no impact at all. In a statistical context, "not significant" indicates that the results obtained may have occurred by chance, and therefore, there is insufficient evidence to ensure a strong or consistent relationship between the use of AR and learning motivation.

However, on the other hand, *the unstandardized coefficients* (B) value of 0.363 indicates that, on a practical scale, there is an increase in learning motivation of 0.363 units for every one unit increase in AR use. This means that although this effect is not statistically strong enough to be called "significant," there is a positive trend that is visible: when AR is used more intensively or more effectively, learning motivation tends to increase.

In other words, although this increase is not statistically significant (as it could be affected by other variables or sample variation), in practice, AR can still be seen as a useful tool to boost learning motivation. This suggests that AR has potential that has not been fully revealed in this study, and may be more effective when used in certain conditions or when combined with other learning strategies. Therefore, further research is needed to dig deeper into how AR can be optimized to truly increase learning motivation significantly.

The Influence of Social Support on Learning Motivation

Motivation plays a very important role in the lives of students who are still in the educational environment. Motivation has a significant influence in achieving various academic and personal goals. One important aspect of motivation is the

presence of social support. Social support is a form of interpersonal interaction involving two or more people to meet the basic needs of individuals such as security, social relationships, approval, and affection (Muhajiroh, 2020) .

The presence of social support is crucial for students, as a lack of it can negatively impact their learning outcomes. Students who feel supported by family, friends, and teachers tend to be more motivated to learn, perform better academically, and have better emotional well-being. Conversely, students who lack social support may feel isolated, less confident , and less motivated, which can ultimately affect their academic performance.

Therefore, creating a supportive and loving environment is essential in improving student motivation and learning outcomes. This can be done through open communication, providing positive reinforcement, and building strong and respectful relationships between students, teachers, and parents. In this way, students will feel more motivated and better able to achieve their educational goals.

Based on the results of the study above, it was found that the direct influence between the variables of social support and learning motivation has a significance value of 0.259. Because this value is greater than 0.05, it can be concluded that the second hypothesis (H2) is rejected. This means that there is no significant influence between social support (X_2) and learning motivation (Z) with an *unstandardized coefficients (B)* value of -0.239, indicating that the direction of the influence is negative. Practically, this means that if social support increases by one unit, learning motivation will actually decrease by 0.239 units.

The results of the above study also contradict the results of previous studies, such as research (Muhajiroh, 2020) , (Suciani & Rozali, 2014) , (Usman et al., 2021) , (Rohman, 2023) , (Rosa, 2020) , (Rohana & Kusmiyanti, 2021) , and (Amseke, 2018) showed that social support has a significant effect on students' learning motivation: Revealing that social support is the most significant factor in motivating students to learn. Although this is not a statistically significant result, this negative direction is worth noting. This negative effect may seem counterintuitive given that the existing literature generally suggests that social

support should increase learning motivation. There are several possibilities why the results of this study are not significant, including: a) Quality of Support: Not all forms of social support have the same quality. Excessive or inappropriate support can cause stress or dependency, which in turn can reduce students' intrinsic motivation. b) Perception of Support: Students may not always perceive the social support they receive as something positive. For example, support that is perceived as controlling or coercive can be detrimental to learning motivation.

Augmented Reality Technology on Student Learning Outcomes through Learning Motivation

Augmented reality media is a visual technology that integrates virtual world objects into real-world displays in *real time*. The use of this technology-based learning media can increase students' motivation, interest, and imagination in participating in learning, thus having a positive impact on their learning outcomes. (Mulyani & Masniladevi, 2021).

By utilizing AR, students can interact directly with learning materials in a more realistic and interesting form. This not only makes learning more engaging, but also helps students understand complex concepts in an easier and more enjoyable way. In addition, AR allows teachers to create more dynamic and interactive learning experiences, which can stimulate students' curiosity and creativity. As a result, students become more motivated to learn and more actively participate in the learning process, which can ultimately improve their academic achievement.

It is known that the direct influence given by *Augmented Reality* (X_1) on learning outcomes (Y) is 0.822. While the indirect influence between *Augmented Reality* (X_1) on learning outcomes (Y) through learning motivation (Z) is the multiplication of the *Beta value of Augmented Reality* (X_1) on learning motivation (Z) with learning motivation (Z) on learning outcomes (Y), namely: $0.363 \times -0.220 = -0.079$. So the total influence given by *Augmented Reality* (X_1) on learning outcomes (Y) is the direct influence plus the indirect influence, namely: $0.822 + (-0.079) = 0.743$. Based on the calculation above, it is known that the direct influence value is 0.822 and the indirect influence is -0.079, which means that the

indirect influence value is smaller than the direct influence value. This means that H8 is rejected, so it can be concluded that there is no significant influence between *Augmented Reality* on learning outcomes through learning motivation. The results of this study indicate that the indirect influence of *Augmented Reality* on learning outcomes through learning motivation is not significant, which is contrary to previous research which found a significant influence through learning motivation, such as research conducted by (Mulyani, 2022), (Ardani & Fitriyah, 2023), and Research (Febriningrum & Purwaningsih, 2022), stated that there is an influence between the two variables.

Although this study shows that the indirect effect of *Augmented Reality* on learning outcomes through learning motivation is not significant, this result is different from previous studies. The very large direct effect shows the great potential of this technology in improving learning outcomes. Therefore, further research is needed to understand the role of learning motivation in mediating the effect of *Augmented Reality* on learning outcomes and to identify other factors that may influence this result.

Conclusion

Based on the results of the research and discussion above, it can be concluded as follows that *Augmented Reality* (X1) and social support (X2) do not show a significant effect on learning motivation (Z) individually or simultaneously. *Augmented Reality* (X1) and social support (X2) have a significant effect on learning outcomes (Y) separately. Learning motivation (Z) has a significant effect on learning outcomes (Y). Simultaneously, *Augmented Reality* (X1), social support (X2), and learning motivation (Z) affect learning outcomes (Y). *Augmented Reality* (X1) and social support (X2) do not show a significant effect on learning outcomes (Y) through learning motivation (Z).

Suggestion

The useful suggestions are starting from schools must develop and integrate AR technology in the learning process. Training for teachers and counseling guidance programs must be strengthened to ensure that social support provided is effective and positive. Also programs focus on increasing student

learning motivation, sharing extracurricular activities, academic achievement and more interactive teaching methods. So with this, further research is needed to identify and understand other factors that influence student learning motivation. These include environmental factors, teaching quality, conditions, student psychology, and other learning technologies.

References

- Alhafid, AF, & Nora, D. (2020). Contribution of Parental Social Support and the Role of Peers to the Sociology Learning Outcomes of Grade X and XI Students at SMA Negeri 2 Bengkulu Selatan. *Sikola Journal: Journal of Education and Learning Studies* , 1 (4), 284–300. <https://doi.org/https://doi.org/10.24036/siloka.v1i4.53>
- Amseke, FV (2018). The Influence of Parental Social Support on Achievement Motivation. *Ciencias: Journal of Educational Research and Development* , 1 (1), 65–81.
- Arista, H. (2024). The Influence of Self-Efficacy and Social Support on Student Learning Outcomes. *Penkomi Journal: Educational and Economic Studies* , 7 (1), 115–123. <https://doi.org/https://doi.org/10.33627/pk.v7i1.1707>
- Arrofa Acesta, & Nurmaylany, M. (2018). The Effect of Using Augmented Reality Media on Student Learning Outcomes. *Didaktif: Journal of Elementary School Teacher Education* , 4 (2), 347.
- Aulia, A., Hefni, H., & Melia, Y. (2023). The Influence of Learning Motivation on Learning Outcomes of Class X Students. *Jambura Sports Coaching Academic Journal* , 2 (2), 63–76. <https://doi.org/https://doi.org/10.37905/jscaj.v2i2.21343>
- Banjarani, WA, & Ridwan, M. (2023). The Influence of Augmented Reality Media on Motivation to Learn Football Passing. *JUMPER: Journal of Sports Education Students* , 3 (2), 123–129. <https://doi.org/https://doi.org/10.5508/jumper.v3i2.903>
- Carolina, Y. Dela. (2023). Augmented Reality as a 3D Interactive Learning Media to Improve Learning Motivation of Digital Native Students. *Ideguru: Jurnal Karya Ilmiah Guru* , 8 (110–16), <https://doi.org/10.51169/ideguru.v8i1.448>.
- Darmawan, IG bagus, & Jaedun, A. (2016). The Influence of Student Learning Motivation on the Learning Outcomes of Class XI Students in the Building Drawing Subject of SMK Negeri 1 Seyegan. *JPTS: Electronic Journal of Civil*

Engineering Education Students , 4 (1), 1–7.

- Fajar, AN (2020). *The Effect of Using Augmented Reality Media on Students' Motivation and Learning Outcomes in Plant Tissue Material* . Siliwangi University.
- Febriningrum, DP, & Purwaningsih, SM (2022). The Influence of the Assemblr Edu Application Based on Augmented Reality Technology on the Learning Outcomes of Indonesian History Subjects of Class XI IPS SMAN 8 Surabaya. *AVATAR: E-Journal of History Education* , 13 (1), 1–10.
- Felipus, I., & Amseke, FV (2024). The Influence of Social Support and School Well-Being on Students' Achievement Motivation. *Al-Qolbu: Journal of Education, Social and Science* , 2 (1), 14–20. <https://doi.org/https://doi.org/10.59896/qalbu.v2i1.61>
- Hapudin, HMS, & Praja, AKA (2022). *Educational Leadership: Concepts and Strategies for Improving the Quality of Education* (1st ed.). Cahaya Harapan.
- Husnaldi. (2023). The Influence of Android-Based Augmented Reality (AR) Learning Media on Student Learning Outcomes in Mathematics Subjects on Spatial Building Materials. *JPEE: Journal of Professional Elementary Education* , 2 (2), 121–240.
- Kusuma, RLD, Buchori, A., & Wibisono, A. (2024). The Effect of Using Augmented Reality Media with a Contextual Approach on Motivation and Learning Outcomes of Vocational High School Students in the Simkomdig Subject. *JIPETIK: Scientific Journal of Information & Computer Technology Research* , 5 (1), 57–68. <https://doi.org/https://doi.org/10.26877/jiptek.v5i1.9582>
- Muhajiroh, A. (2020). *The Influence of Social Support on Learning Motivation of Psychology Students of Maulana Malik Ibrahim State Islamic University of Malang Class of 2016*. UIN Maulana Malik Ibrahim Malang.
- Muhammad, M. (2016). The Influence of Motivation in Learning. *Lantanida Journal* , 4 (2), 87.
- Mulyani, NS, & Masniladevi, M. (2021). The Effect of Augmented Reality Learning Media on Learning Outcomes of Volume of Cube and Cuboid Space Structures of Grade V Students of SDN Gugus 2 Koto Tuo. *Journal of Basic Education Studies* , 4 (2), 3.
- Ningsih, MF (2015). *The Influence of Augmented Reality Learning Media on Student Learning Outcomes on the Concept of Waves*. Thesis, Faculty of Islamic Education and Teacher Training . Syarif Hidayatullah State Islamic University, Jakarta.
- Novalinda, E., Katun, S., & Widodo, J. (2018). The Influence of Learning Motivation

- on Learning Outcomes of Accounting Subjects of Grade X Students of Accounting Department, Odd Semester, SMK PGRI 5 Jember, Academic Year 2016/2017. *JOURNAL OF ECONOMIC EDUCATION: Scientific Journal of Education, Economics and Social Sciences* , 11 (2), 115–119. <https://doi.org/https://doi.org/10.19184/jpe.v11i2.6456>
- Oktaviana, M. (2020). *The Influence of Social Support and Self-Efficacy on Learning Outcomes in Economics Subjects of Class XI IPS Students of SMA Negeri 13 Jambi City* . University of Jambi.
- Permana, A., Ihksan, AN, Tarsono, T., Sidiq, AP, & Lubis, AS (2024). PAI Teachers' Efforts to Overcome Boredom in Learning Islamic History by Using Interactive Media. *Pendes: Scientific Journal of Elementary Education* , 9 (1), 2902–2917. <https://doi.org/https://doi.org/10.23969/jp.v9i1.11992>
- Putrie, CA Rahman. (2019). The Influence of Parental Social Support, Learning Interest and Academic Procrastination on Student Learning Outcomes in Economics Subjects at Accredited State Senior High Schools in Padang City. *Journal of Economic Education* , 12 (1), 18–26.
- Qadir, A., Putra, KE, A, MF, & R, PK (2020). The Importance of Education for the Young Generation in Improving the Quality of Education. *Indonesian Journal of Education* , 3 (11), 10231033. <https://doi.org/https://doi.org/10.36418/japendi.v3i11.1289>
- Rahman, S. (2021). The Importance of Learning Motivation in Improving Learning Outcomes. *Proceedings of the National Seminar on Elementary Education "Independent Learning in Welcoming the Era of Society 5.0,"* 289–302.
- Rohana, MYU, & Kusmiyanti, K. (2021). The Influence of Social Support on the Learning Motivation of Cadets of the Correctional Science Polytechnic. *PeTeKa: Journal of Classroom Action Research and Learning Development* , 4 (2), 133–143.
- Rohman, F. (2023). *The Influence of Social Support on Learning Motivation of Class IX-I Students of SMP N 3 Sekampung* . University of Lampung.
- Rosa, NN (2020). The Relationship of Social Support to Online Learning Motivation of Students During the Covid-19 Pandemic. *TANJAK: Journal of Education and Teaching* , 1 (2), 147–153. <https://doi.org/https://doi.org/10.35961/tanjak.v1i2.146>
- Sari, UP, Suwarma, DM, Subroto, DE, Roswati, R., Jenuri, J., & Hita, IPAD (2024). No Title The Effect of Utilization of Augmented Reality Technology on the Level of Student Learning Interest in Delivering Learning Materials. *Journal on*

Education , 6 (3), 17672–17679.
<https://doi.org/https://doi.org/10.31004/joe.v6i3.5698>

- Sarmiati, S., Kadir, K., Bey, A., & Rohim, U. (2019). The Influence of Learning Motivation and Social Support on Mathematics Learning Outcomes of Class VIII Students of SMP Negeri 2 Kusambi. *Journal of Mathematics Education* , 10 (1), 77–88. <https://doi.org/http://dx.doi.org/10.36709/jpm.v10i1.5646>
- Siregar, S. (2015). *Quantitative Research Methods: Completed with Comparison of Manual Calculation and SPSS* (First). Kenaca Division of Prenamedia Group.
- Suciani, D., & Rozali, YA (2014). The Relationship between Social Support and Learning Motivation in Esa Unggul University Students. *Esa Unggul Psychology Journal* , 12 (2), 43–47.
- Usman, CI, Wulandari, RT, & Nofelita, R. (2021). The Influence of Parental Social Support and Self-Confidence on Students' Learning Motivation. *Educational Guidance and Counseling Development Journal* , 4 (1), 10–16. <https://doi.org/http://dx.doi.org/10.24014/egcdj.v4i1.12605>
- Yuni, K. (2024). *The Effect of Using Audio-Visual Media Based on AR (Augmented Reality) to Increase Learning Motivation of Class V Students at SDN 23 Ampenan in the 2023/2024 Academic Year* [Muhammadiyah University of Mataram]. <http://respository.ummat.ac.id/id/eprint/8611>
- Zuana, TY, & Aziz, H. (2023). The Influence of Augmented Reality Media on Learning Outcomes of Islamic Cultural History. *JRPAI: Journal of Islamic Religious Education Research* , 3 (2), 147.