



# IJRASET

International Journal For Research in  
Applied Science and Engineering Technology



---

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

---

**Volume: 8      Issue: XI      Month of publication: November 2020**

**DOI: <https://doi.org/10.22214/ijraset.2020.32215>**

**[www.ijraset.com](http://www.ijraset.com)**

**Call:  08813907089**

**E-mail ID: [ijraset@gmail.com](mailto:ijraset@gmail.com)**

# A Research Based on How Augmented Reality can Impact on Student

Prem Prakash Avdhesh Singh

Academic Research Student, Department of Information Technology, B.K. Birla College of Arts, Science and Commerce  
(Autonomous) Kalyan, Thane, India.

**Abstract:** *Physical-world is three-dimensional and mostly we prefer to use two-dimensional media in education. The mixture of AR technology with the tutorial content creates new quite automated applications and acts to strengthen the effectiveness and attractiveness of teaching and learning for college kids in real-world scenarios. Augmented Reality (AR) could also be a technology field that involves the seamless overlay of a computer generates virtual images on the important world, in such how that the virtual content is aligned with world objects, and may be viewed and interacted with in real-time.*

*Technology in education can influence students to seek out activities and should motivate them, leading to an efficient process of learning. The review of the results of research shows that, overall, AR technologies have positive potential and advantages which may be adopted in education.*

**Keywords:** *Augmented reality, Virtual reality, Technology, Education, Systematic review.*

## I. INTRODUCTION

Immersing learners in the world and interact with them thereupon world mostly can't be convenient. Although the natural world is three-dimensional then also we prefer to use two-dimensional media in education which is very convenient, familiar, flexible, portable, and inexpensive. But it's static and doesn't offer dynamic content, alternatively, the computer-generated three-dimensional virtual environment is often used but these scenes require high-performance special effects which is more expensive than others.

The use of augmented reality (AR) in education is a crucial topic of research. AR includes the addition of virtual objects into real environments to facilitate real-time interaction. Research on AR applications in education remains in an early stage, and there's a scarcity of research on the consequences and implications of AR within the field of education. The use of AR can increase student learning motivation and contribute to improved academic achievement. There is insufficient research on the impact of using mobile AR in education, and there's room to explore the potential of AR to enhance student learning motivation and after using the AR mobile application?

## II. OBJECTIVES

- 1) To understand that How Augmented reality can improve the education.
- 2) To analyse that how augmented reality can get interest of student in education.

We can attain these objectives by checking through survey analysis. Therefore, we propose the following hypothesis as under:

- a) *Hypothesis:* "Students attitude towards the usage of mastering gadgets in AR can undoubtedly and extensively increase their belief of enjoyment".

## III. LITERATURE REVIEW

The basic aspects of augmented reality was introduced by Silva et al. [8] the article conclude that in future we will make use of some devices which can make education also as another fields easier. The article explaining the concept of Augmented reality in education was introduced by Kesim et al. [1]. The article explained that mostly we like better to use two-dimensional media in education. the mixture of AR technology and academic content creates new sort of automated applications and acts to reinforce the effectiveness and attractiveness of teaching and learning for college kids in real world scenarios. the ultimate conclusion of this text was How education by using AR we will make interesting with the assistance of machines like Head Mounted Displays, Handheld displays and Pinch Gloves. the utilization of Augmented Reality to realize educational inclusion has been not deeply explored was given by Quintero et al. [2] From this text it's said that, the 2030 agenda for sustainable development, focused on ensuring that nobody is left behind, provides a singular opportunity to make more inclusive and equitable societies. this could start with inclusive education systems. The author Khan et al. [3] also similarly explained that there's a scarcity of research on the consequences and implications of augmented reality within the field of education. the aim of this research was to live and understand the impact of an augmented reality mobile application on the training motivation of scholars.

The author indicated that there's room to explore the potential of AR to enhance student learning motivation and contribute to improved academic achievement. The author Saidin et al. [4] says that the merging of AR with education has recently attracted research attention due to its ability to permit students to be immersed in realistic experiences. Therefore, this idea paper reviews the research that has been conducted on AR. this text gives information about the benefits and beneficial uses of AR features are ready to engage students in learning processes and help improve their visualization skills. Chen et al. [6] in article says that, within the next few years, the appliance of augmented reality technology, especially within the application of mobile intelligent terminals, will emerge during a sizable amount. Azuma et al. [9] surveys the sector of AR, during which 3D virtual objects are integrated into 3D real environment in real time. From this text we conclude that in future we will make use of AR in some physical training like machine repair, teaching some techniques and etc. According to j.hull et al. [10] image recognition is mostly used to derive link information from real world to digital world, From this research paper we conclude that a special purpose device, such as a pen with a camera in it, These states all the use of augmented reality with paper documents. Kohn et al. [11] explains that digital revolution has blurred or even entirely eliminated former industry boundaries, the new digital world comprises neither predefined boundaries nor industry-based limitations and is hence spreading everywhere and shows the future of manufacturing processes This paper systematically analysed existing literature and use cases to determine, which role AR currently plays in transforming manufacturing processes and what possible potentials for future work exist with augmented reality.

#### IV. METHODOLOGY

An online survey was held using Google Form. The link of the form was circulated in social media platform. The questionnaires in the form were designed to test the proposed hypothesis which verified certain parameters.

##### A. Participants

To test the proposed hypothesis, this study used two conditions i.e.

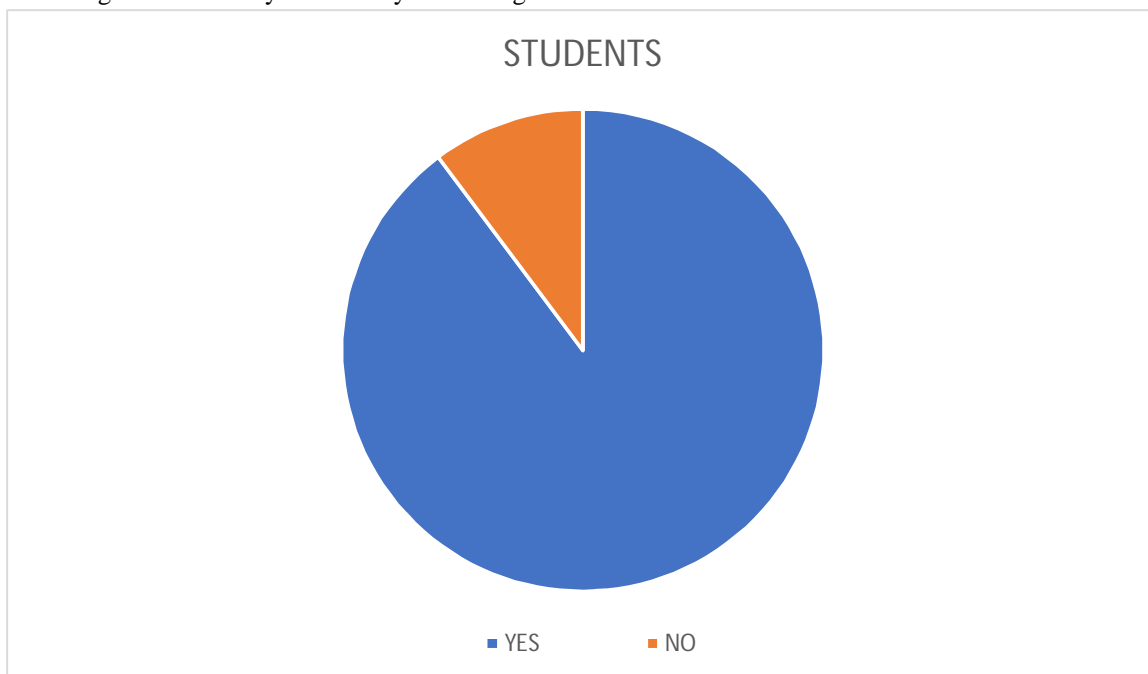
- 1) Augmented reality will capture student interest of learning.
- 2) Augmented reality will awkward for students and teachers.

Total of 62 participants data was collected from different states of India. Among the 62 participants 79% were students and remaining 21% were Teachers.

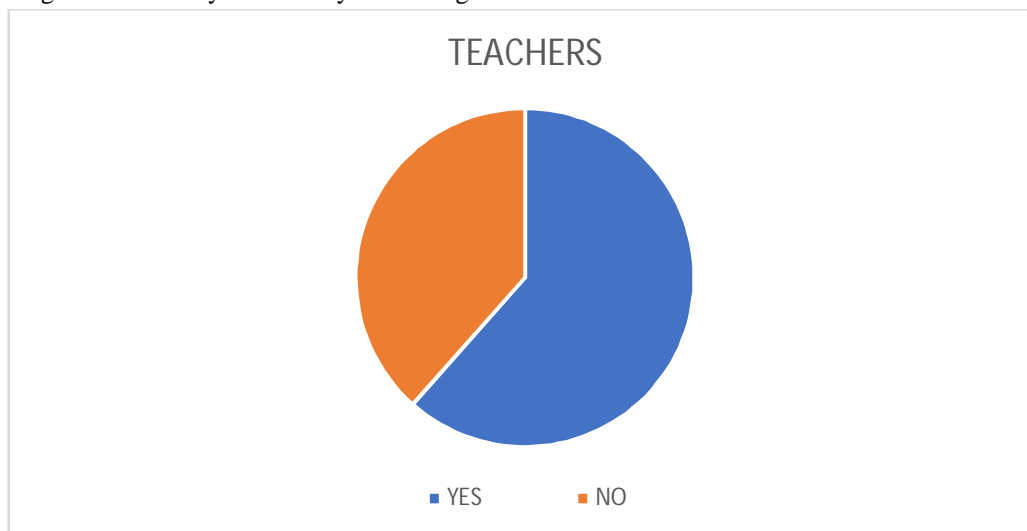
##### B. Measures

Participants were asked to indicate their agreement on a two scale (1= YES, 0= NO).

Students reply on Can Augmented reality make study interesting or Awkward?



Students reply on Can Augmented reality make study interesting or Awkward?



#### V. EXPERIMENT

- The outcome of survey analysis calculated by Chi-Square test with two scales (YES/NO).
- After performing the chi-square test got  $\chi^2$  tabulated=0.004 and  $\chi^2$  calculated= 0.103 at the significant level of 95%.
- Here  $\chi^2$  tabulated <  $\chi^2$  calculated therefore we accept the hypothesis i.e. Students are interested to learn with Augmented reality that will positively increase their number.

#### VI. RESULT

The test scores of paired samples rendered through survey analysis calculated using Chi-square test which is resulted in stating that the participants are interesting in study through augmented reality. The result also explains that there is vast difference between number of students before and after use of augmented reality. Therefore, the hypothesis is accepted.

The survey included some outcomes to support hypothesis. The participants were asked few questions to mainly focus on the students and teachers' interest in augmented reality. It will be positively result in growth of augmented reality in education.

#### VII. CONCLUSION

Cost-effective Augmented reality technologies provided by AR devices, smartphones, Head Mounted Displays, Handheld displays and Pinch Gloves can provide better way of interactive and immersive education. This study has proved that concept of augmented reality would increase the potential and understanding ability in student as well as it would revolutionize the teaching learning process. In the end augmented reality provides students with exciting and adventurous educational environment. However, all the teachers and current technologies have their own set of strength and weakness that should be considered while integrating these in education.

#### VIII. ACKNOWLEDGEMENT

A special gratitude is conveyed to our Prof. Swapna Augustine Nikale, Department of Information Technology of B.K. Birla College of Arts, Science and Commerce (Autonomous) Kalyan, Thane. Also, thanks to the participants who responded to the survey.

#### XI. REFERENCES

- Kesim, M. E. H. M. E. T. (n.d.). augmented reality in education:current technologies and the potential for education. Prem. Retrieved August 23, 2020, from [https://www.researchgate.net/publication/281336331\\_A\\_Review\\_of\\_Research\\_on\\_Augmented\\_Reality\\_in\\_Education\\_Advantages\\_and\\_Applications](https://www.researchgate.net/publication/281336331_A_Review_of_Research_on_Augmented_Reality_in_Education_Advantages_and_Applications)
- Quintero, J. (2020, August 23). Augmented Reality in Educational Inclusion. A Systematic Review on the Last Decade. *Frontiers*. <https://www.frontiersin.org/articles/10.3389/fpsyg.2019.01835/full>
- Khan, T. (2019, February 3). The Impact of an Augmented Reality Application on Learning Motivation of Students. *Hindawi*. <https://www.hindawi.com/journals/ahci/2019/7208494/>
- Saidin, N. (2015, June 25). A Review of Research on Augmented Reality in Education: Advantages and Applications | Saidin | *International Education Studies* | CCSE. Ccsenet. <http://www.ccsenet.org/journal/index.php/ies/article/view/50356>



- [5] Alkhatabi, M. (2017, February 28). Augmented Reality as E-learning Tool in Primary Schools' Education: Barriers to Teachers' Adoption | Alkhatabi | International Journal of Emerging Technologies in Learning (IJET). Mona.  
<https://onlinejournals.org/index.php/ijet/article/view/6158/0#:~:text=Augmented%20reality%20applications%20show%20good,be%20immersed%20i,n%20realistic%20experiences.>
- [6] chen, Y. U. N. Q. I. A. N. G. (n.d.). an overview of augmented reality technology. Google. Retrieved August 31, 2020, from [https://scholar.google.com/scholar\\_url?url=https://iopscience.iop.org/article/10.1088/17426596/1237/2/022082/pdf&hl=en&sa=T&oi=ucasa&ct=ufr&ei=cG1MX7rJDiuMvYwSC8bDAAQ&scisig=AAGBfm2iJ-9e1nqF4e5EhTFmZzhA2rh-fA](https://scholar.google.com/scholar_url?url=https://iopscience.iop.org/article/10.1088/17426596/1237/2/022082/pdf&hl=en&sa=T&oi=ucasa&ct=ufr&ei=cG1MX7rJDiuMvYwSC8bDAAQ&scisig=AAGBfm2iJ-9e1nqF4e5EhTFmZzhA2rh-fA)
- [7] Cipresso, Pietro. (2020, August 31). The Past, Present, and Future of Virtual and Augmented Reality Research: A Network and Cluster Analysis of the Literature. Frontiers. <https://www.frontiersin.org/articles/10.3389/fpsyg.2018.02086/full>
- [8] flavian, C. A. R. L. O. S. (n.d.). the impact of virtual, augmented and mixed reality technologies on the customer experience. Elsevier. Retrieved August 31, 2020, from <https://www.sciencedirect.com/science/article/pii/S0148296318305319>
- [9] Silva, R. (n.d.). introduction to augmented reality. NLFSC. Retrieved August 31, 2020, from <https://www.google.com/url?sa=t&source=web&rct=j&url=http://Incc.br/~jauvane/papers/RelatorioTecnicoLNCC-2503.pdf&ved=2ahUKEwicsqef5MTrAhUymeYKHebQAOYQFjAcgQIBRAB&usq=AOvVaw1DtZruEZsKkC31r-HX8rv>
- [10] azuma, R. O. N. A. L. D. T. (n.d.). a survey of augmented reality. Huges. Retrieved August 31, 2020, from [http://scholar.google.co.in/scholar\\_url?url=https://www.mitpressjournals.org/doi/pdfplus/10.1162/pres.1997.6.4.355&hl=en&sa=X&scisig=AAGBfm2yK5H06OVRfeMKBe7zKNrXAFyIEA&nossl=1&oi=scholarr](http://scholar.google.co.in/scholar_url?url=https://www.mitpressjournals.org/doi/pdfplus/10.1162/pres.1997.6.4.355&hl=en&sa=X&scisig=AAGBfm2yK5H06OVRfeMKBe7zKNrXAFyIEA&nossl=1&oi=scholarr)
- [11] j.hull, J. O. N. A. T. H. A. N. (n.d.). paper based on augmented reality. Frontiers. Retrieved September 11, 2020, from [https://www.researchgate.net/publication/220984437\\_Paper-Based\\_Augmented\\_Reality](https://www.researchgate.net/publication/220984437_Paper-Based_Augmented_Reality)
- [12] K.O.H.N. (n.d.). AUGMENTED REALITY – A GAME CHANGING TECHNOLOGY FOR MANUFACTURING PROCESSES? Ecis2018.Eu. Retrieved September 11, 2020, from <https://ecis2018.eu>
- [13] Dey, A. (2020, September 11). A Systematic Review of 10 Years of Augmented Reality Usability Studies: 2005 to 2014. Frontiers. <https://www.frontiersin.org/articles/10.3389/frobt.2018.00037/full>
- [14] sirakaya, M. U. S. T. A. F. A. (n.d.). trends in educational augmented reality studies: a systematic review. MOJET. Retrieved September 23, 2020, from <http://dx.doi.org/10.17220/mojet.2018.04.005>
- [15] garzon, J. U. A. N. (n.d.). A Meta-analysis of the impact of Augmented Reality on students' learning effectiveness. ResearchGate. Retrieved September 23, 2020, from [https://www.researchgate.net/publication/332567312\\_A\\_Meta-analysis\\_of\\_the\\_impact\\_of\\_Augmented\\_Reality\\_on\\_students'\\_learning\\_effectiveness/link/5d48d29a4585153e593fe119](https://www.researchgate.net/publication/332567312_A_Meta-analysis_of_the_impact_of_Augmented_Reality_on_students'_learning_effectiveness/link/5d48d29a4585153e593fe119)
- [16] patrov, P. L. A. M. E. N. D. (n.d.). the effect of augmented reality on students learning performance in stem education. Information. Retrieved October 28, 2020, from [https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.mdpi.com/24144088/3/2/39/pdf&ved=2ahUKEwicw43mlv\\_rAhVI7HMBHQIpDRQQFjAUegQIDhAB&usq=AOvVaw3svw9e-pbjsejU9I8GJUr6&cshid=1600860967341](https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.mdpi.com/24144088/3/2/39/pdf&ved=2ahUKEwicw43mlv_rAhVI7HMBHQIpDRQQFjAUegQIDhAB&usq=AOvVaw3svw9e-pbjsejU9I8GJUr6&cshid=1600860967341)
- [17] gutierrez, J. O. R. G. E. M. A. R. T. I. N. (n.d.). Augmented reality to promote collaborative and autonomous learning in higher education. Scholar.Google.Com. Retrieved October 29, 2020, from <https://scholar.google.com>
- [18] serio, A. N. G. E. L. A. D. I. (n.d.). Impact of augmented reality system on students' motivation for a visual art course. Compedu. Retrieved October 29, 2020, from <http://dx.doi.org/10.1016/j.compedu.2012.03.002>
- [19] Kai Wu, H. (n.d.). Current Status, Opportunities and Challenges of Augmented Reality in Education. Htps://Scholar.Google.Com. Retrieved October 29, 2020, from [https://scholar.google.com/scholar\\_lookup?hl=en&volume=62&publication\\_year=2013&pages=4149&journal=Computers+and+Education&author=H.+Wu&author=S.+W.+Lee&author=H.+Chang&author=J.+Liang&title=Current+status%2C+opportunities+and+challenges+of+AR+in+education#d=gs\\_qabs&u=%23p%3D9\\_YWRon9V-4J](https://scholar.google.com/scholar_lookup?hl=en&volume=62&publication_year=2013&pages=4149&journal=Computers+and+Education&author=H.+Wu&author=S.+W.+Lee&author=H.+Chang&author=J.+Liang&title=Current+status%2C+opportunities+and+challenges+of+AR+in+education#d=gs_qabs&u=%23p%3D9_YWRon9V-4J)
- [20] Gopalan, V. (n.d.). A study of students' motivation using the augmented reality science textbook. Scholar.Google.Com. Retrieved October 29, 2020, from [https://scholar.google.com/scholar\\_lookup?hl=en&volume=1761&publication\\_year=2016&pages=2735&journal=AIP+Conference+Proceedings&issue=1&author=V.+Gopalan&author=A.+N.+Zulkifli&author=J.+A.+A.+Abubakar&title=A+study+of+students%E2%80%99motivation+using+the+AR+science+textbook#d=gs\\_qabs&u=%23p%3DG5fEXhIxeDAJ](https://scholar.google.com/scholar_lookup?hl=en&volume=1761&publication_year=2016&pages=2735&journal=AIP+Conference+Proceedings&issue=1&author=V.+Gopalan&author=A.+N.+Zulkifli&author=J.+A.+A.+Abubakar&title=A+study+of+students%E2%80%99motivation+using+the+AR+science+textbook#d=gs_qabs&u=%23p%3DG5fEXhIxeDAJ)
- [21] Bacca, J. (n.d.). Augmented reality trends in education: A systematic review of research and applications. Htps://Creativecommons.Org. Retrieved October 29, 2020, from <https://creativecommons.org>
- [22] Ibáñez, M. B. (n.d.). Experimenting with electromagnetism using augmented reality: Impact on flow student experience and educational effectiveness. Compedu. Retrieved October 29, 2020, from <http://dx.doi.org/10.1016/j.compedu.2013.09.004>
- [23] Chiang, T. H. C. (n.d.). An augmented reality-based mobile learning system to improve students' learning achievements and motivations in natural science inquiry activities. Creativecommons. Retrieved October 29, 2020, from <https://creativecommons.org>



10.22214/IJRASET



45.98



IMPACT FACTOR:  
7.129



IMPACT FACTOR:  
7.429



# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089  (24\*7 Support on Whatsapp)