



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 2, February 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

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Augmentation: Platform for Enhancing Experiential Learning

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ABSTRACT: Education plays an integral role in today's technology-enabled world, irrespective of the place of dwelling. As the need for experiential learning increases and the means of delivering change to digital-first. The future of Education is in front of us; it involves usage of technologies such as Augmented Reality, Virtual Reality and Machine learning. However, despite the increasing accessibility and decreasing cost of the supporting devices, these technologies are not being widely adopted due to several constraints. To tackle those, we propose a model and a reimagined learning infrastructure to increase the usage of these technologies in schools. Augmentation proposes a prototype to enhance experiential learning digitally using several technologies primarily involving Augmented Reality and Virtual Reality.

KEYWORDS: Augmented Reality; Education Technology; Experiential learning; Immersive learning; Virtual reality

I. INTRODUCTION

Distance learning cannot accommodate skill-based/ hand-on subjects along with a deuteriation of collaborative classroom education. The human touch is gone; the student cannot grasp the concept and before, regardless of skill or non-skill subject.

1. Augmentation

Augmentation is an E-learning platform that integrates Augmented Reality and Virtual Reality in a single platform to improve and provide a better distance learning experience overall. The Goal of Augmentation is to provide the next-best alternative to our mode of distance learning. Utilizing existing technologies such as Augmented Reality, Virtual Reality, and machine learning, we improve education quality even without being physically present. The uniqueness of augmentation comes into play when the circularity within the platform; it becomes a technological eco-system that is self-sufficient.

2. Advantages of Augmentation

With proper implementation of an ideal augmented environment, students' skills, such as social and academic, will have positive and increased outcomes [1]. With augmented learning, people can save much time. It is an innovative approach for delivering a well-designed, learner-centered, interactive, and facilitated learning environment to anyone, anyplace, anytime by utilizing the attributes and resources of various digital technologies, along with other forms of learning materials suited for open, flexible, and distributed learning environment as described [2].

II. AUGMENTATION

Augmentation being a B2B educational platform with a circular model has main four elements to it, for example, Fig 1

1. Augmented Reality

The augmented reality within Augmentation can be used as teaching material. 3-D models in augmented reality can help students understand and grasp the difficult concepts with immersive visualization; augmented 3-D models can be shown through a mobile phone camera. [3] For example, Fig 2

2. Virtual Reality

The virtual reality within Augmentation is used to bring about a classroom interactive within a virtual environment mimicking a real-life classroom experience. This experience aims to motivate the student to have much more interactive and collaborative sessions. Even though Virtual Reality is more expensive and has health constraints over long hours of use, the overall impact on the mental health of having social interaction, especially during the quarantine period, can be significant. [4]

3. Data Insights

The potential data generated from Augmentation can be beneficial for teaching effectiveness and have comprehensive analysis and essential data insights [5].

4. Augmentation Store

The Augmentation Store is an online store providing support for 3-D assets, purchasing or renting of devices, and purchasing educational applications for schools to use within the classroom.

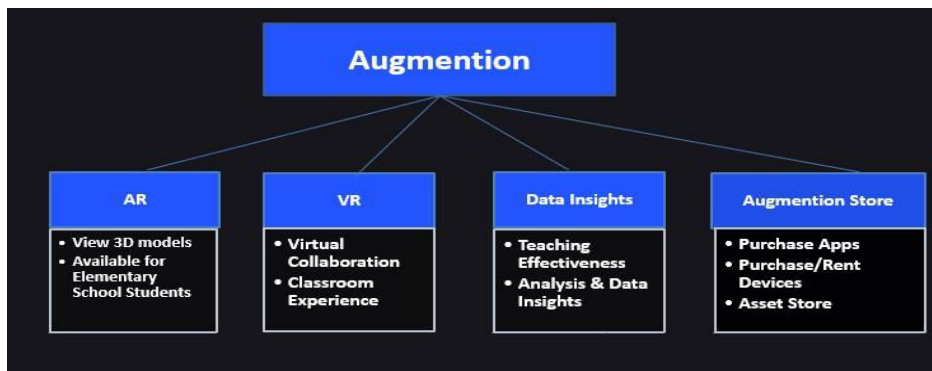


Fig 1. Augmentation Eco-system



Fig 2. Augmented reality

III. METHODS

With the rise in the number of students opting for distance learning during the COVID-19 pandemic, we saw the transition phase. Despite having all the technological resources, the success, and student satisfaction rate of the distance learning model was meagre due to several constraints that could be tackled with a newer business model to drive adoption of tools that help enhance the course delivery in a remote setting. [6]



With the introduction of 5G and increased access to phones and laptops, we realized while the technologies like Augmented Reality and Virtual reality solve the problems faced in education, the educational institutes did not have the capabilities to establish the required infrastructure. Surveys conducted with students and institutes found they could not invest everything upfront without using it for a while.

However, they would not mind paying monthly for trying it out.

This led us to formulate a reimagined learning infrastructure where we support the adoption of these technologies with the prime focus on bringing costs down. By fostering collaboration among educational institutes and the private sector we have made it easy for schools to purchase or rent expensive 3D assets, required devices and course materials from our assets marketplace thereby shifting from an isolated high fixed investment model to a more affordable monthly subscription model.

1. Learning Environment (Educators and learners)

Educators and learners feel a disconnect in remote learning model, educators finding it hard to convey the concepts and learners in grasping what is being taught. This disconnect is caused due to the static learning models which are being used right now, a prime reason for preference of face-to-face learning:

- Tech-enabled learning environments: Technology adoption is on the rise in the education sector as the world moves to a digital model, propelling the needs for tools to facilitate the learning environment in a remote classroom.
- Collaborative learning: Collaboration is an evident challenge often felt during remote learning and is a key to a better understanding of the education environment.
- Assessment: In remote learning environment, assessments are ineffective as they do not test the practical knowledge of learners.

IV. RESULTS

The significant advantage which Augmentation provides over the existing remote learning system is the integration of many online remote learning tools into one platform which includes remote collaborative learning environment, Augmented Reality and Virtual Reality, this integration aims to increase the effectivity of remote learning. [7], [8]

Augmentation provides a significant feature which the current remote learning system does not provide; interactive learning using Virtual Objects and Environment which allows the students to not only learn by interacting with objects but also collaborate on that object with other peers. Interactive learning is proven to be an effective form of learning as it makes use of the student's critical and problem-solving skills which allows the students to learn effectively.[7], [8]

V. CONCLUSION

Augmentation provides a platform where educators and learners can successfully connect and interact with each other remotely to remove the limitations of remote learning. The platform is designed to tackle all the problems associated with accessibility, adaptability, and affordability of remote learning.

To tackle these problems, Augmentation makes use of collaborative learning tools and technology-enabled learning in its learning environment. This prototype aims to elevate remote learning to rival in-class learning rather than being a mere last choice, by providing a remote learning environment which makes learning enjoyable and fun for the learners while also remaining as an effective medium of Education.

REFERENCES

- [1] K. Engellant (2014) A Quantitative Study with Online Collaborative Learning in a Computer Literacy Course in Graduate Student Theses, Dissertations, and Professional Papers. 4389
- [2] B. H. Khan, (2006) Flexible Learning in an Information Society: Hershey PA17033:Information Science Publishing, USA.
- [3] N. Gupta and M. K. Rohil (2017).Exploring possible applications of augmented reality in education, 2017 4th International Conference on Signal Processing and Integrated Networks (SPIN), 437-441, doi: 10.1109/SPIN.2017.8049989.



- [4] X. Wang, S. Hegde, C. Son, B. Keller, A. Smith, F. Sasangohar. (2020). Investigating Mental Health of US College Students during the COVID-19 Pandemic: Cross-Sectional Survey Study. *Journal of Medical Internet Research*, 22(9), e22817
- [5] T. H. Matthew, J. Bouwma-Gearhart, H. Joon Park (2017). Data driven decision-making in the era of accountability: Fostering faculty data cultures for learning, *The Review of Higher Education* Johns Hopkins University Press, 40, 2017, 391-426, 10.1353/rhe.2017.0013
- [6] Online learning amid the COVID-19 pandemic: Students' perspectives - Muhammad Adnan and Kainat Anwar
- [7] O. M. Aldalalah, Z. Ababneh, A. Bawaneh, and W. Alzubi, Effect of Augmented Reality and Simulation on the Achievement of Mathematics and Visual Thinking Among Students, *Int. J. Emerg. Technol. Learn.*, 14, 164, 2019.
- [8] Elmqaddem N. Augmented Reality and Virtual Reality in education. Myth or reality, *Int. J. Emerg. Technol. Learn.*, 14, 3, 234-242, 2019.



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