From the Moon to the Universe

Group 3: Saishreya Nuguri, Xaviera Shedrick-Owens, Yupei Duan

Welcome to our innovative VR learning environment, where education meets excitement! Our program merges the creative brilliance of Xaviera's enchanting "Moon's Message" project and Yupei's captivating "A Mini Solar System" project, crafting an immersive learning experience designed to introduce students to the wonders of our solar system in a way that's both enjoyable and engaging.

In this virtual realm, students embark on a thrilling educational journey, testing their newfound knowledge in Shreya's ingenious "Trivia Room" project. Here, collaboration and quick thinking are key as teams race against the clock to emerge victorious.

Our overarching mission is to deepen learners' understanding of the solar system's intricacies, emphasizing the vital connection between our planet Earth and its loyal companion, the moon. Enriching this exploration, we weave in a traditional San (South African indigenous) saga, adding a touch of humanity to the vastness of the universe.

This team project isn't just a learning opportunity; it's a profound platform fostering comprehension of the profound relationships between humanity, our beloved Earth, and the boundless universe that surrounds us. Join us in this transformative adventure, where education transcends boundaries and imagination knows no limits.

Learning objectives

After immersing themselves in this enriching learning environment, students will emerge equipped with a myriad of skills and knowledge:

1. **Planetary Proficiency:** Students will confidently name the planets in their order from the sun, showcasing their understanding of our solar system's layout.
2. **Solar System Sketching:** With a keen eye for detail, students will skillfully sketch the intricate structure of the solar system, capturing its vastness and complexity on paper.
3. **Cultural Connection:** Through engaging narratives, students will become intimately acquainted with African origin stories, deepening their appreciation for the rich tapestry of cultures that shape our world.
4. **Creative Expression:** Empowered by newfound insights into African culture and the universe, students will unleash their creativity to craft original stories, weaving together elements from African heritage and the cosmic expanse.

This immersive experience not only imparts scientific knowledge but also nurtures cultural awareness and unleashes the imaginative spirit within every learner, fostering a well-rounded understanding of the universe and its diverse origins.

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Target Learner

The target audience is elementary school students (2nd to 4th grades).

Instructional Design Principles

Objective

To provide an immersive and interactive learning experience for students, enhancing their understanding of complex subjects, promoting social skills, and fostering independent and critical thinking.

Principles implemented:

- **Constructivist Theory**: Encourages active exploration and understanding based on existing knowledge.
- **Situated Learning**: Learning takes place in authentic contexts through social interaction and collaboration.
- **Discovery Learning**: Students learn by solving problems, exploring, and discovering information independently.

Lesson Structure

1. **Activities**: Guided exploration of the virtual world, “Mini Solar System”, based on a culturally rich story, "The Moon’s Message”. Students solve puzzles, read messages, and collaborate to learn new words and cultural aspects in the “Trivia room”.
2. **Implementation**: Discovery Learning integrated with Constructivist Theory, allowing students to explore and learn through problem-solving tasks.
3. **Outcome**: Students actively explore, share findings, and collaboratively build knowledge of language and culture.

This comprehensive VR-based lesson plan combines the principles of Constructivist Theory, Situated Learning, and Discovery Learning to create an engaging and effective learning experience. By catering to the audience and subject area, the lesson plan promotes active participation, critical thinking, and collaborative learning, fostering a holistic educational journey for all students involved.

World view

The VR world has 3 rooms, “The Moon’s Message”, “Mini Solar System” and the “Trivia Room.” The learning environment is housed on well-lit land surrounded by trees. The trees act as a natural boundary to help keep the students in the designated learning area.

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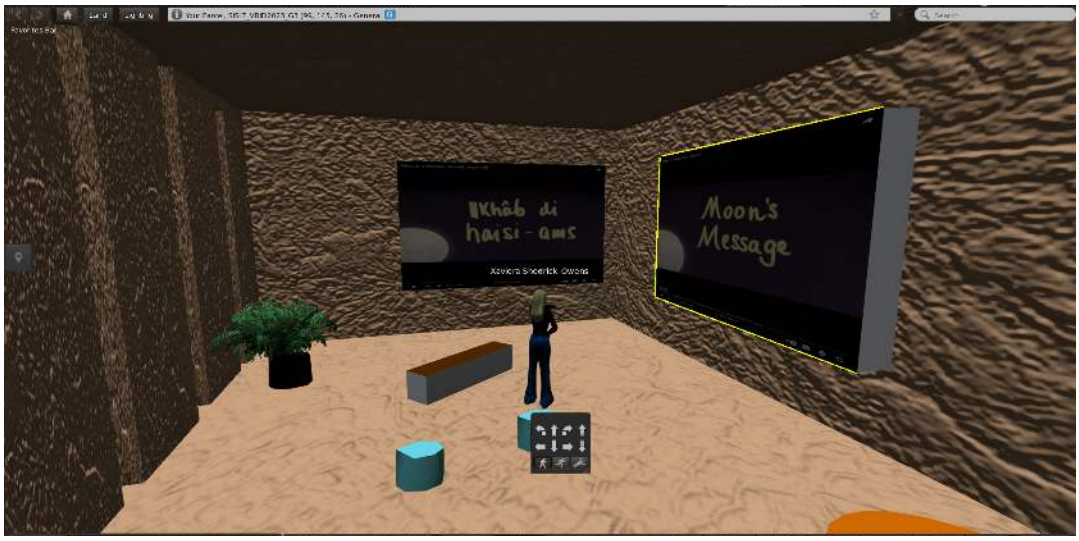
Room 1: “The Moon’s Message”

Step into the enchanting world of 'The Moon's Message,' a unique masterpiece that seamlessly blends the thrill of space exploration with the profound significance of preserving age-old indigenous traditions. This exceptional book delves into the heart of traditional San-Origin legends, where the moon, humans, and animals intertwine in captivating narratives. Presented in both English and Khoe, an endangered language, this creative tale from Southern Africa comes alive through an interactive media board, offering an immersive journey into the moons of the solar system.



In this captivating exhibit, students are empowered with the choice to experience the story in their preferred language, fostering a sense of connection and inclusivity. By embracing the richness of indigenous narratives and championing endangered languages and cultures, 'The Moon's Message' serves as a beacon, promoting a deep respect for heritage and the vibrant tapestry of human storytelling.

Room 2: “ Mini Solar System”

A Mini Solar System VR World is a captivating and immersive virtual reality experience that transports students into the heart of our solar system, scaled down to a miniature yet incredibly detailed version. Imagine stepping into a mesmerizing cosmic realm where planets, moons, and celestial bodies orbit in harmony, each one meticulously recreated in stunning 3D graphics.

In this virtual universe, students have the unique opportunity to explore the intricate orbits of planets, witness breathtaking solar eclipses, and marvel at the majestic rings of gas giants. The VR world offers a dynamic and interactive environment, allowing users to interact with planets and observe their natural satellites.

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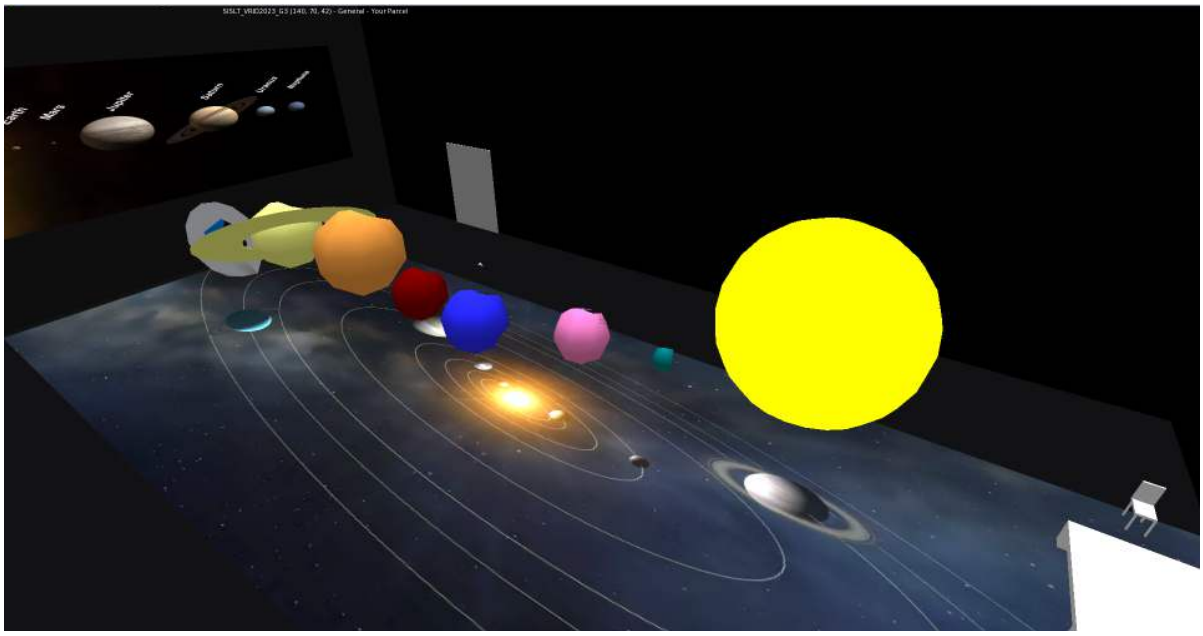
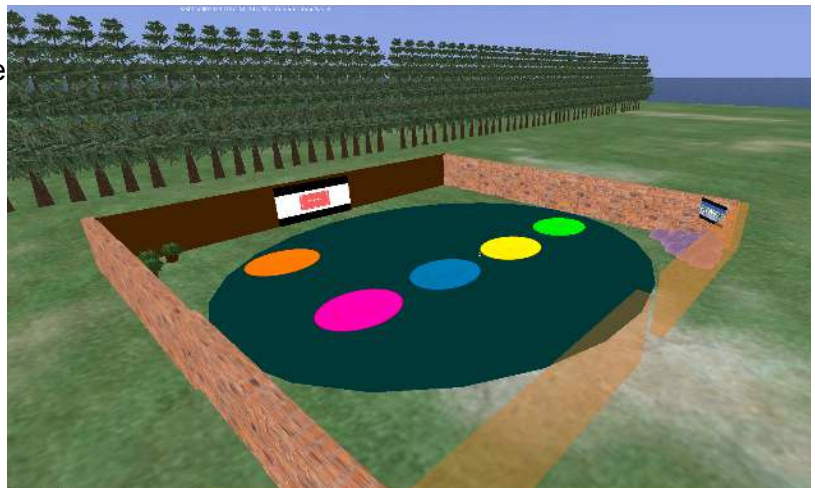


Navigating through this Mini Solar System VR World feels like embarking on a celestial adventure. Students can travel between planets and get up close to their surfaces.

Educationally enriching, this VR world serves as an engaging tool for learning about the solar system, enabling students to deepen their understanding of planetary science, astronomy, and the wonders of space. The Mini Solar System VR World offers an unparalleled and visually stunning experience, making users feel like genuine space explorers in the comfort of their virtual environment.

Room 3: “Trivia Room”



A Trivia Quiz Room in the VR world dedicated to testing students' knowledge of the solar system is an engaging and interactive educational experience. In this VR Trivia Quiz Room, students are challenged with a series of thought-provoking questions and fascinating facts about the solar system.

Students participate in the quiz by selecting answers, making the learning experience hands-on and interactive. The questions range from basic

planetary facts to intricate details about space exploration, encouraging students to apply their knowledge in real-time.

As students progress through the quiz, they can track their scores and compare them with classmates, fostering healthy competition and a sense of camaraderie. The VR environment also allows for dynamic elements such as timed challenges and bonus rounds, keeping students engaged and challenged throughout the experience.

Beyond mere testing, the Trivia Quiz Room serves as an immersive learning tool, reinforcing key concepts about the lessons. It encourages critical thinking, problem-solving, and teamwork if played in groups. The gamified approach transforms learning about space into an exciting adventure, making the exploration of the solar system not just informative but also incredibly fun and memorable.

Real-time collaboration

OpenSim provided us the opportunity to create our VR world in real-time collaboration.

This is one feature we, as the development team, immensely appreciated, as it not only helped us create the world in collaboration but also gave us a sense of what the students would experience when in the virtual world. This also helped us design the world to facilitate more interaction among the students.

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Conclusion

In our VR learning journey, we ventured deep into the cosmos and rich cultural heritage, merging science, creativity, and tradition. We are proud of the VR world we created that would facilitate students to confidently name the planets, sketch the universe, delve into African origin stories, and craft imaginative narratives. This immersive experience is designed to transform learners into storytellers and artists, fostering a deep understanding of the universe and our interconnected world.

As we conclude, we celebrate this transformative odyssey, where education transcended boundaries. Our VR project was not just a learning opportunity; it was a testament to limitless possibilities. With newfound knowledge and creativity, students can step into the world, carrying the spirit of exploration, understanding, and connection.

Bonus Task:

Screen recording of the group discussion, while in the OpenSim world, uploaded to Youtube: https://www.youtube.com/watch?v=rOfb-Dxi2GU