

e - Proceedings



Proceeding for International Undergraduates Get Together 2024 (IUGeT 2024)

"Undergraduates' Digital Engagement Towards Global Ingenuity"



Co-organiser:

INSPIRED 2024. Office of Research, Industrial Linkages, Community & Alumni (PJIMA), UiTM Perak Branch

Bauchemic (Malaysia) Sdn Bhd

Universitas Sebelas Maret

Universitas Tridinanti (UNANTI)

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E-Recreational Hub: Student Gaming Recreational Area and Virtual Reality Simulation Chair with Self-Sustaining Energy Approach

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ABSTRACT

The E-Recreational Hub (ERH) integrates gaming and Virtual Reality (VR) with sustainable design, catering to the growing demand among students for recreational and educational activities. Studies indicate significant engagement in sports, e-sports, and online gaming among Malaysians, underscoring the ERH's relevance. ERH features 3D simulation chairs, an internet router, and a self-sustain electric supply powered by solar energy that align with SDG 13: Climate Action. ERH also enhances social interaction and global exploration while aligning with SDG 4: Quality Education. Equipped with high-speed 5G internet, power sockets, an online payment control system, and speakers, the hub provides an eco-friendly environment using reclaimed timber construction. The ergonomic design of simulation chairs ensures comfort and proper posture for the user. By offering a balanced natural setting and promoting sustainability, the ERH fosters a healthy mind and body. Its commercial potential is significant, appealing to environmentally conscious consumers and providing unique, high-tech facilities for gaming and learning. Future expansions could include additional technological features, educational tools, and food business opportunities, enhancing the ERH's appeal and functionality.

KEYWORDS: E-recreation, student gaming, simulation chair, virtual reality, self-sustaining energy

DESIGN DESCRIPTION

Gaming has become a daily routine for many students, often serving as a form of recreation. Studies show that most Malaysians are interested in sports activities (55%), followed by exercise (37%), and recreation (21.6%). Additionally, 22.4% of Malaysians participate in e-sports (Aman, 2024). Another study reveals that 92.4% of students enjoy playing online games as it makes them happy, connects them with friends, and fosters teamwork (Rasdi, 2021). Using simulation chairs as both playing and learning tools supports the trend of gaming and virtual reality (VR), aligning with SDG4: Quality Education (Hafizah, 2024). This E-Recreational Hub (ERH) serves as a gaming area for students, featuring 3D simulation chairs powered by sustainable energy to enhance social interaction and global exploration. An online control system manages the ERH's power sockets, internet routers, and speakers, enabling students to pay for and use the facilities according to their payment amount and allotted time. Solar panels installed on the roof provide a sustainable power supply to the hub. During their leisure time, students can enjoy gaming with high-speed internet and explore 3D worlds on the simulation chairs. The hub's timber design creates a cool environment under shady trees, enhancing the overall experience. The simulation chair also features ergonomic design criteria that align with Malaysian students' anthropometric standards, ensuring comfort and proper posture. This thoughtful design helps prevent strain and supports extended use during gaming and learning activities.



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Figure 1: Proposed design: Exterior 3D human level view from entrance and backside, floor plan and sections



Figure 2: ERH system: Solar energy electrical and internet system, and anthropometric and ergonomic study



NOVELTY AND UNIQUENESS

ERH enables students to explore social gaming and 3D simulations, combining play and learning under one roof in a healthy natural environment. This approach fosters a healthy mind and body by providing access to outdoor greenery, creating a balanced and invigorating setting outside the classroom. The design incorporates reclaimed timber from demolition or construction sites, repurposing it into structurally glue-laminated timber elements, thus promoting sustainability and reducing waste in construction projects (Bodimeade, 2023).

BENEFITS TO MANKIND

Self-sustaining energy powers electronics without damaging the environment, eliminating greenhouse emissions. The construction incorporates innovative glue-laminated timber reclaimed from demolition and construction sites, promoting sustainability. This hub serves students worldwide, offering a space for recreation and gaming that enhances social interactions and global learning. Additionally, the installation of an advanced 5G internet router in the timber hub ensures an unlimited, high-speed experience for gaming and educational activities, making it an ideal setting for modern, eco-friendly student engagement.

COMMERCIAL POTENTIAL

ERH has significant commercial potential due to students' rising demand for gaming and VR experiences. It provides a sustainable and eco-friendly gaming environment, appealing to the growing market of environmentally conscious consumers. The hub's unique features, such as ergonomic simulation chairs and reclaimed timber construction, add value and differentiation in a competitive market. Offering high-speed 5G internet and pay-per-use facilities, it caters to the needs of tech-savvy students worldwide, enhancing their social and educational experiences. This combination of sustainability, innovation, and technology positions the hub for widespread adoption and commercial success.

CONCLUSION

ERH effectively addresses the growing demand for gaming and VR experiences among students, providing a space that combines recreation, learning, social interaction, and team spirit. Studies indicate that a significant portion of Malaysians, particularly students, are engaging in e-sports and online gaming, spotlighting the relevance of ERH. The design sustainability, using reclaimed timber, solar energy features, and quality education, aligns with Sustainable Development Goals (SDG 2030), while ergonomic simulation chairs ensure user comfort and support.

ERH's unique features and advanced 5G connectivity cater to modern students, enhancing their overall experience. Future directions could include expanding the ERH to accommodate more users with other technology features, educational tools, and food business ideas, such as an e-book for readers, 3D printing for designing tools, and the installation of vending machines to allow food and beverage businesses in the ERH.

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