

Chula's Chemistry Metaverse Harnesses Gaming to Transform Science Education

BANGKOK, THAILAND, April 29, 2026 /EINPresswire.com/ -- A research team at [Chulalongkorn University](#) is transforming chemistry education through an immersive 3D "Chemistry Metaverse," a platform that blends gaming with scientific training to expand access, improve safety, and better align learning with real-world skills.

Developed under the Metaverse of Academic Nexus for Global

Opportunities (MANGOs), the platform

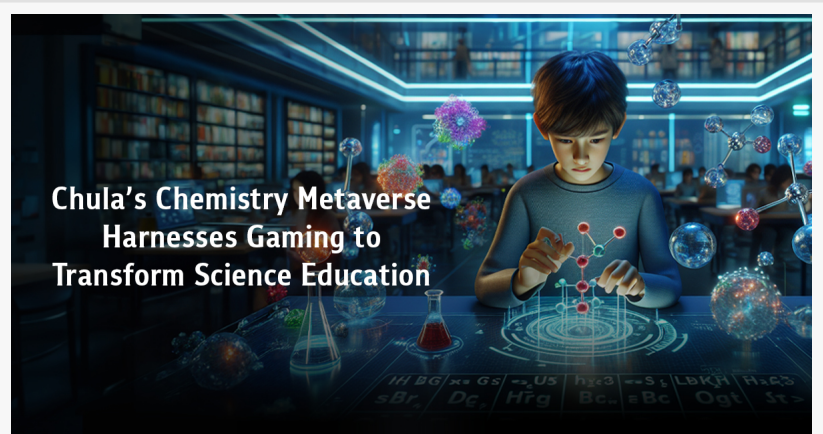
allows students to enter a virtual "digital twin" of the university's [Faculty of Science](#). Inside, they can conduct experiments, operate advanced instruments, and solve real-world problems through interactive simulations.

The idea originated from Assoc. Prof. Dr. Chadin Kulsing, a chemistry researcher and avid gamer, who saw potential in turning the engagement of virtual worlds into meaningful learning. A chance collaboration with Prof. Dr. Lunchakorn Wuttisittikulij of the [Faculty of Engineering](#) helped bring the concept to life, resulting in a cross-disciplinary project combining chemistry, electrical engineering, and 3D game development.

Unlike traditional laboratories, often constrained by cost, equipment shortages, and safety risks, the metaverse provides a risk-free environment where students can experiment freely without real-world consequences, reinforcing safety awareness and scientific reasoning.

The platform is structured around outcome-based education, focusing on practical competencies rather than theoretical knowledge alone. Universities can collaborate with industry partners to design modules that train students in specific skills, such as operating complex instruments or optimizing chemical processes.

Learning is gamified through a tiered system, guiding users from beginner to professional levels



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via “quests.” Modules range from virtual titration exercises to forensic investigations, where students analyze DNA samples to solve simulated crimes. Advanced tools like gas chromatography—typically inaccessible to many undergraduates—are also available in the virtual environment.

One of the platform’s most innovative features is its integration with scent-release technology, enabling users to experience “virtual smells” linked to digital objects, such as plants in a simulated herb garden. This multi-sensory approach aims to deepen engagement and understanding. Beyond teaching, the metaverse functions as a virtual research center, offering databases of chemical compounds and natural products that could support industries such as cosmetics and perfumery.

While adoption will depend on institutional policies, the project has already attracted international interest, with partners in Australia, Italy, and Southeast Asia exploring integration. Developers say the long-term goal is a global network of connected virtual campuses.

By merging gaming with science, the Chemistry Metaverse turns any laptop into a lab and reshapes how students learn chemistry.

Read more: <https://www.chula.ac.th/en/highlight/293902/>

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