CASE 3: Summary

The AI tool described in this study was designed to address the challenge of effectively introducing complex sustainability concepts—specifically urban mining and resource conservation—to preschool children in an engaging, age-appropriate manner. The main users are young learners aged 5 to 6, operating within a senior kindergarten context in Southern Taiwan. Through a custom-designed digital interface, children accessed interactive stories generated by ChatGPT and accompanied by AI-generated visuals. These stories were presented in two formats: unstructured and structured. The structured format—used with the experimental group—followed a teacher-designed narrative framework including theme, plot, character background, and resolution. This scaffolding supported comprehension and creative expression, making abstract environmental issues more accessible to young minds.

The AI system played a dual role: generating content and delivering it via an intuitive interface with animation, sound, and touch navigation, allowing children to independently explore sustainability themes. For distance learning, the digital delivery reduces reliance on paper and physical resources, supports equitable access when technology is available, and facilitates repeated, self-paced engagement. The AI's core practical functions included story creation, visual illustration, and interaction support, enhancing engagement and understanding.

This AI-supported model transformed the learning experience by fostering language development, storytelling ability, and creative thinking, especially in children exposed to the structured narrative version. It also addressed key distance education challenges such as engagement, comprehension of abstract topics, and digital literacy in early childhood. Broader educational value lies in its capacity to instill environmental awareness early, reduce environmental impact, and adapt content for various learning styles. However, scalability requires access to devices and trained teachers. The AI and child collaboratively produced narrative expressions that neither could create alone. In contexts such as digitally enriched early education, this tool opens possibilities for integrating sustainability with foundational literacy, provided that local implementation includes teacher training, content scaffolding, and device availability