Rayner Digital Labs

Personal Tutors

Our commitment to responsible AI ensures that our VR education applications provide a safe, ethical, and effective learning experience. By prioritizing privacy, transparency, and reliability, we design AI-driven tools that enhance education while maintaining full control over content and interactions.

Local AI Personal Tutors for Every Student

Built into every application, our AI personal tutors—Comet and Luna—deliver clear, engaging, and unbiased instruction directly within the VR environment. These tutors operate entirely locally on the device, ensuring student data privacy and security by avoiding reliance on external cloud-based systems or real-time internet connections. This local operation guarantees a controlled and secure learning space for every student.

Pre-Developed, Curriculum-Aligned Content

All questions, answers, and instructional prompts provided by Comet and Luna are carefully pre-developed offline to align directly with the Australian Curriculum and key learning objectives. This method avoids the risks associated with real-time AI content generation, such as misinformation or inappropriate content, ensuring a consistent, accurate, and pedagogically sound experience for every learner.

Pre-Compiled Voice and Visuals for Consistency and Safety

The voices of our AI tutors are synthesized during development and stored locally, avoiding cloud-based voice generation and its associated privacy risks. Similarly, all AI-generated images used within the applications are pre-reviewed and integrated during development, eliminating the chance of real-time inappropriate or misleading visuals.

Empowering Student-Centered Learning

Comet and Luna promote individualized pacing and active participation, supporting students of diverse backgrounds and learning styles. They guide students through inquiry, problem-solving, and reflection—making every VR session meaningful, accessible, and aligned to measurable educational outcomes.

Key Stats and Research on AI Personal Tutors in Education (Pre-Trained, Local AI Models)

Increased Learning Gains

Studies on Intelligent Tutoring Systems (ITS) have consistently shown strong impacts on student achievement. VanLehn (2011) reported that ITSs produced a mean effect size of 0.76 when compared to traditional classroom instruction, indicating gains equivalent to as much as one additional grade level. Similarly, a meta-analysis by Ma, Adesope, Nesbit, and Liu (2014), published in the *Journal of Educational Psychology*, found a pooled effect size of 0.66 across multiple studies, reinforcing the effectiveness of pre-developed, personalized tutoring systems in improving learning outcomes.

Improved Engagement and Retention

AI tutors that offer adaptive prompts and consistent guidance are shown to reduce frustration while improving focus and information retention. Research by Pane et al. (2014), conducted through RAND Corporation on the Cognitive Tutor Algebra I system, found that students using AI-driven platforms demonstrated better engagement and sustained academic progress. Supporting this, Koedinger et al. (1997) showed that intelligent tutoring systems implemented in real classrooms helped students stay on task and retain key concepts more effectively.

Support for Diverse Learners

AI personal tutors allow students to progress at their own pace and revisit concepts as needed, a major advantage for learners with different needs or backgrounds. Heffernan and Heffernan (2014) demonstrated that such systems can improve learning outcomes for both high- and low-achieving students, making them ideal for inclusive classrooms. In a broader context, Luckin et al. (2016) argued that adaptive AI can reduce inequalities by providing responsive, individualized instruction regardless of student ability.

Scalability and Accessibility

The use of pre-trained, locally-run AI tutors makes scalable, personalized learning achievable without relying on constant internet connectivity or cloud processing. Holstein, McLaren, and Aleven (2019) described how local AI models empower teachers to integrate intelligent systems into their classrooms without added privacy risks or infrastructure demands. Luckin and colleagues (2016) similarly emphasized the importance of maintaining educator control and student data protection by deploying AI that is secure, offline, and curriculum-aligned.