PROMPT 1: EDUCATION TECHNOLOGY

How can we leverage next generation technologies to create and deploy transformative learning experiences and provide equitable access to engaging, immersive educational experiences for learners from kindergarten through adulthood?

Prompt Overview

The World Bank Group, as one of the largest financiers of education worldwide, emphasizes that "the use of information and communication technologies in education can play a crucial role in providing new and innovative forms of support to teachers, students, and the learning process more broadly."

Verizon believes that leading edge technology (e.g. 5G, Artificial Intelligence, Augmented/Virtual reality) will be a key element of the future of equitable education and wants to explore how innovative technology solutions can continue to transform the way we learn and teach.

Therefore, we are looking for ideas that leverage leading technology solutions (e.g. 5G, Big data, Artificial Intelligence, Augmented/Virtual reality) to enhance education for learners from kindergarten through adulthood, and/or ideas that increase access to dynamic educational experiences in under-resourced settings or for learners with disabilities. Ideas must provide equitable access to engaging, immersive educational experiences.

Technology solutions targeting the U.S./developed world contexts are of interest. Programmatic solutions to implement existing technologies are not of interest.

Themes to Consider

Please consider the following themes and questions when developing the focus of your project. These are thought starters and should be used as additional context for the prompt.

- **Enhancing Learning and Teaching through Immersive Experiences**
    - Understand challenges to academic achievement, especially for underserved populations such as *Black American communities, indigenous communities, communities of color, English language learners, students with disabilities, low income school districts and low income students*
    - Contemplate how immersive, interactive and engaging learning experiences can improve outcomes for students, especially those from underserved populations.
        - Consider how to make different aspects of learning more immersive (e.g. content creation, group work, access to and evaluation of new information).
        - Consider the role of technology in making education not only more engaging, but also more inclusive, considering different cultural contexts, language skills, disabilities, etc. and how technology can fill in gaps in learners' abilities.

- **Improving the Experience of Remote Learning**

- Consider the strategies teachers use to interact with their students virtually in order to maintain high quality, inclusive instruction and continue to support their students' socio-emotional needs.
- Understand ways to support teachers so they can spend more time on instruction and less time troubleshooting their technological tools.
- Consider the unique needs of students from underserved groups in remote learning scenarios and what technology solutions may help to address them (e.g. access technologies such as closed captioning and accessibly built platforms; translation services for English language learners).
- Reflect on disparities that may be created by technology in remote classrooms (i.e. how does curriculum differ if some students have access to immersive tools like virtual reality hardware or advanced connectivity, but others do not).

- **Equity in Education Technology**
  - Understand the barriers to technology access among underserved school communities so that technology helps to increase equity, not further inequality. Consider ways to:
    - Make learning more equitable between communities, schools, and families that are differently resourced (e.g. technology tools, internet access, technology skills)
    - Open pathways and approaches to deploying immersive experiences affordably
    - Support learners with different needs (e.g. English Language Learners, students with learning disabilities, people with disabilities)
    - Address the needs of different age groups (e.g. K-12 students, higher education and/or adult learners)

Questions to Consider

- Who is your target population(s), what are their unique needs, and how can you involve them in the design of your project as both user/testers and co-developers?
- What is the potential impact of this project (e.g. number of people, depth of impact, duration of impact)?
- Are there potential partner organizations with aligned missions? How can you involve them in the design, implementation, or evaluation of your project?
- How might you address issues of safety and privacy that may arise from the implementation of your project?
- How are you thinking beyond the creation of mobile apps to develop innovative new technology solutions or novel applications of leading edge tech? How can you leverage next generation technology and Verizon expertise to develop new technology solutions that improve how we learn and teach?
- How can you apply an intersectional lens to your project that takes into account how someone's race, gender, language, geography or ability might change how they interact with your product/service?
- How could your project be scaled and replicated? Is it flexible in order to evolve over time?
- Are there regulations in place that would prevent you from implementing your project? If yes, how will you address them?
- What barriers to uptake do you identify? What strategies will you use to address them?

Current Research

Next Generation Tech:

- Mining Big Data in Education: Affordances and Challenges
- Big data in education: a state of the art, limitations, and future research directions
- Reasons to Use Virtual Reality in Education
- Augmented and Virtual Reality in Education
- Breakdown of How to Use and Deliver VR for Different Ages

- 5 Ways to Successfully Deliver VR
- Tips for Delivering VR
- VR/AR Privacy Concerns
- Safety of VR for Younger Students
- Privacy and Human Rights with AR/VR
- How 5G Will Advance EdTech on Campus
- How 5G Will Reshape Education
- How 5G Will Be a Game Changer in the Education Sector
- The Role of Accessible Technology in Inclusive Education
- National Center on Accessible Educational Materials
- Accessible XR and Universal Design for Learning
- XR Association's DEVELOPERS GUIDE: Accessibility & Inclusive Design in Immersive Experiences

Verizon and Education Technology

- Citizen Verizon - Digital Inclusion
- Why 5G can be the difference-maker in education
- Verizon Innovative Learning - Design Thinking Lab

COVID Impact:

- How COVID is Shaping Tech Use in Education
- An Education System, Divided: How Internet Inequity Persisted through 4 Presidents and Left Schools Unprepared for the Pandemic
- Reimagining a more equitable and resilient K-12 education system
- McKinsey Study--COVID-19 and student learning in the U.S.: The hurt could last a lifetime

Surveys/Data:

- Suddenly Online: A National Survey of Undergraduates During the COVID-19 Pandemic
- Voices from the Virtual Classroom
- EdTech Engagement and Equity in the Pandemic
- Strada Work and Education Survey

Equity and Distance Learning:

- 10 Questions for Equity Advocates to Ask About Distance Learning
- How is the pandemic affecting English Language Learners?
- Universal Design for Learning Framework to Engage Different Types of Learners

Sample Existing Solutions:

- PowerSchool: A tool used to identify instructional gaps that combines assessment, attendance, and behavior data.
- SignAloud Gloves: Winner of the Lemelson-MIT competition, these gloves translate sign into text or speech in order to bridge the communication gap between American Sign Language speakers and people with hearing.
- KaiOS Tech: Software that gives smartphone capabilities to inexpensive mobile phones to create more learning opportunities for under-resourced communities.
- BrightBytes: A leading cloud-based platform for education data that aims to improve learning outcomes for all students by measuring the impact of technology on learning.

- SmartStage: SmartStage is an immersive video environment which replaces the traditional green screen element of a virtual studio and allows the presenters and audience to see and interact with the content around them.
- Dreamscape Learn: Arizona State University's new virtual reality biology curriculum.
- 10 Questions for Equity Advocates to Ask About Distance Learning: This organization also lists a variety of technology-based solutions that different U.S. states have adopted or are trying to implement to make remote learning more equitable.
- Visceral Science: Visceral Science is an immersive VR experience inviting students to explore inaccessible realms, including stars, planets, black holes, and galaxies.
- UnSUNG: An interactive, multiplayer AR learning experience. Students will read through passages about female icons of color and answer multiple choice questions in the app. Correct answers will unlock different rooms related to their lives that students can explore within the AR app.
- Mapper's Delight: A STEAM-driven mixed reality environment that allows students to explore geography through Hip-hop. Working with our database of hundreds of thousands of rap songs from 1979 to the present day, students explore the secret flows and hidden layers of Hip-hop's sociology, history and linguistic innovations. Mapper's Delight provides the means for teachers and students to collaborate using engaging visualizations, cultural relevance, and a project-based approach to data science and experimentation.