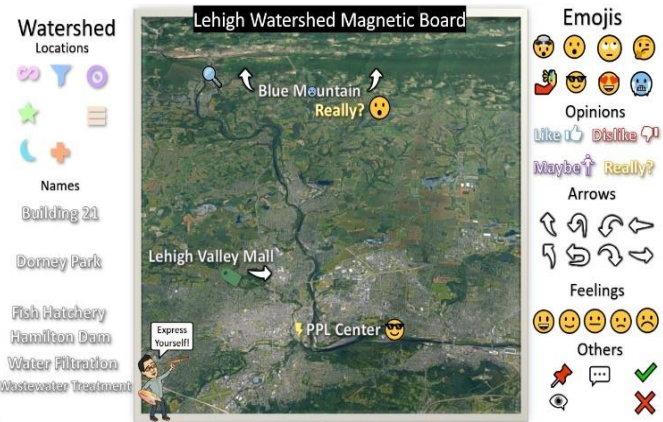


Immersive Virtual Reality Design Considerations to Promote Learning for English Language Learners



Screenshot from the Oculus Go iVR version of the working prototype. The pause menu contains **progress monitoring features** and **hints** that assist the learner complete tasks **at their own pace**.



The 'magnetic' board a **multimodal** format of **self-monitoring activity**, it provides strategic repetition of content vocabulary with imagery, emoticons and content language chunks. 'Freer' types of activities provide new ways of presenting specific content to reinforce intended learning, allow learners to provide more authentic answers, could serve as a formative assessment tool.

This work-in-progress paper describes an immersive virtual reality (iVR) learning game for informal education to promote enhanced engagement, improved spatial thinking, and broader understandings of the Lehigh River watershed's cultural history, geography, and environmental issues. Our instructional design includes game design features in addition to learning elements.

We provide design guidelines for adolescents and adults who are English language learners, including (a) autonomous learning, (b) fostering learners' use of metacognitive strategies, (c) adaptive, supportive, and motivational feedback to maintain engagement, d) sustained time on task, and e) content knowledge learning and language comprehension.

Examples of Virtual Reality instructional design supporting **English**

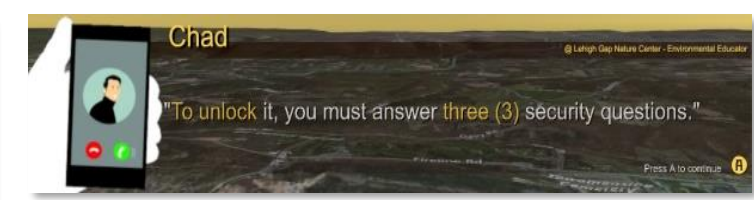
language learner's engagement on immersive tasks that use:

- 1. autonomy** and **metacognitive** practices;
- 2. game-based** narratives, **just-in-time feedback**, and
- 3. authentic materials** focused on **STREAMS** and **vocabulary**.

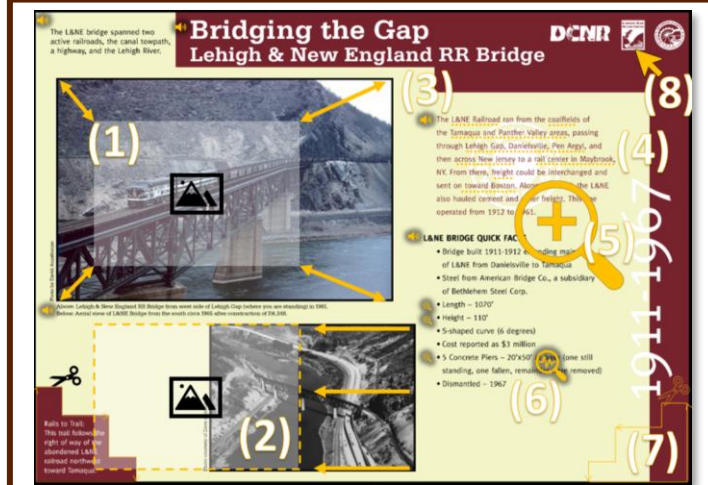
Adapted 'pre-reading' language activity to address the specific vocabulary needs of our iVR games.

Emojis are used as **familiar visual stimuli** to engage learners. 😊

Scales can also serve as a pre/post measure of achievement.

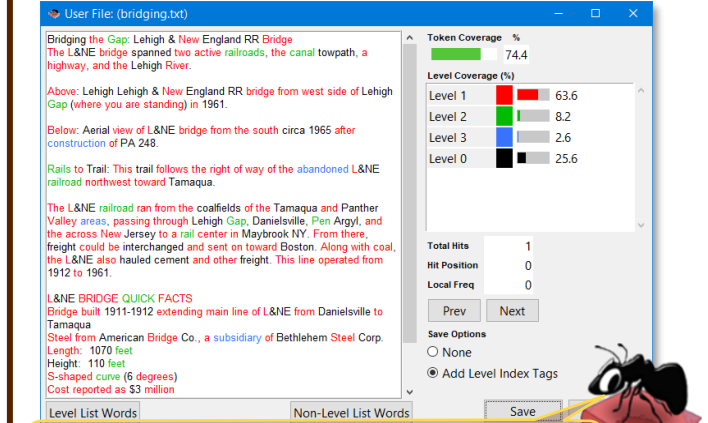


Screenshot from the desktop VR version. It is possible to see the **word highlighting feature** to assist learners' **attention to important details**.



Some **adaptations** for trail information signs:
 (1) Resize images to make space for accommodations.
 (2) Narration over with AI development tools.
 (3) Dotted lines to activate tooltips upon pointer hover.
 (4) Increased font size text.
 (5) Tooltips converting measurement units and values.

And **text analysis** through **frequency word lists**:



Laurence Anthony's **AntWordProfiler**
 A free language profiler software that checks the vocabulary level and complexity of texts using word lists.