



VARIANT: LIMITS 2017A5 POST GAME PLAY SURVEY REPORT

Short Summary of Study

In Spring 2017, Triseum released Variant: Limits, a 3D immersive calculus video game to teach the intuitive understanding of limits. Students at an R1 university were given the opportunity to play Variant: Limits as a supplement to instruction and then complete a post-gameplay survey adapted from Fu, Su, and Yu's proposed eGameFlow survey (2009) that includes both quantitative Likert-scale items and qualitative open response questions. Overall, **70% of the responses indicated that students gained content knowledge, enjoyed playing and had fun**; all while playing a calculus game.



Findings

Approximately 85% of the students reported the gaming activities were related to the learning tasks, while 74% said that they could remain concentrated in the game. 81% of students reported they tried to apply knowledge in the game, 85% indicated they caught the basic ideas of the knowledge taught in the game, and 72% said the game increased their knowledge.

The challenge provided within the game appeared appropriate. 77% of students reported the difficulty of the decisions increased as their skills improved and 72% said their skills gradually improved through the course of making decisions and seeing the consequences of those decisions.



STUDENT QUOTES

IMMERSIVE STORYLINE:

- “The story-line was my favorite. I found myself wanting to advance because I wanted to know how the story ended.”

INTEGRATION OF GAMING WITH CALCULUS CONCEPTS:

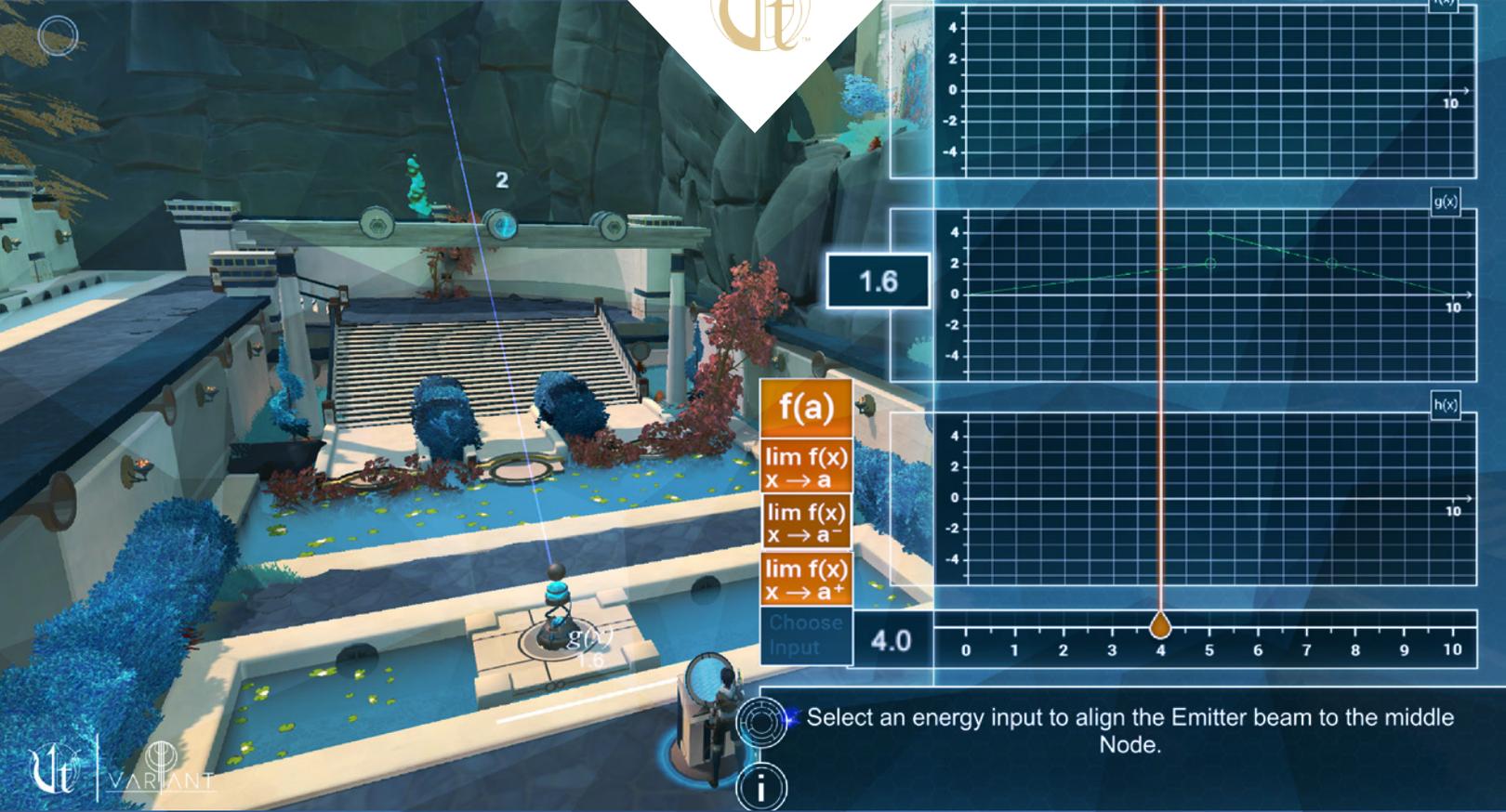
- “I really liked how the math was used in the game. For example, I like how we needed to put the limits on the graph so that we could turn on a light that would open the door. I also liked how you could switch the different functions on to do different things.”
- “I like the general idea of the game and the use of visualization to portray mathematical concepts.”

HAVING FUN WHILE LEARNING

CHALLENGING CALCULUS CONCEPTS:

- “It felt like a real game and not a math game...”
- “The concept of the game was fun. At times I forgot I was playing for school purposes.”
- “I felt rewarded by moving through the game.”
- “The game makes learning the concepts fun.”





72%

The game increased their knowledge



85%

The gaming activities were related to the learning tasks



77%

The difficulty of the decisions increased as their skills improved

74%

They could remain concentrated in the game



81%

They tried to apply knowledge in the game



85%

They caught the basic ideas of the knowledge taught in the game



72%

Their skills gradually improved through the course of making decisions and seeing the consequences of those decisions

FINDINGS

In a survey conducted at an R1 university, students reported the following after playing Variant: Limits

