Countdown Game: Level the Playing Field using Gamification and LTI

The Challenge:
With over 50,000 full time students and just over 3,000 faculty, there are numerous undergraduate courses taught at the University of Texas at Austin with large enrollments. Introductory Statistics, a required course, falls into this category every semester. Students are placed into these large courses, sometimes right out of high school, and expected to perform at the college level. Adding to the challenge for these students, Introductory Statistics includes copious amounts of terminology that is essential to understanding and mastering the course objectives. Each unit, and its accompanying terms, builds upon preceding units, and students find themselves using terms in more than one unit. When instructors of the Introductory Stats course noticed students struggling to grasp foundational knowledge, they envisioned a different way of mastering the content.

The Solution:
The Countdown Game was created to help students achieve success using gamification techniques. The game was built as an LTI application that provides students an opportunity to master foundational knowledge. Students earn points by completing a timed matching game, and are then ranked on a class leaderboard. To move to a higher ranking, students must attempt the game multiple times and improve their performance. An analytics dashboard is provided to instructors with data, such as missed concepts by unit, number of rounds per student, and the leaderboard. Instructors are encouraged to use the information provided by the dashboard to focus on terms and concepts with which students struggle.

Learning Impact Outcomes:
The Countdown Game uses gamification (leaderboard) to help students build a solid foundation of key concepts before formal instruction. It uses a form of self assessment to enhance metacognitive skills which develops key competencies. Skill development occurs outside of class, which explains why instructors report having more time in class to develop deeper cognitive skills. Students are spending more time outside of class immersing themselves in statistical content.

Return on Investment:
Built using the LTI standard, the Countdown Game can connect to any Canvas course and be used in any subject area. Given the number of large courses taught at the University of Texas at Austin, and the amount of terminology used in discipline specific subject areas, the potential impact is vast. With little to no maintenance requirements, the educational benefit and the introduction of student motivation provide a high value to the Learning Management System ecosystem.