Teaching Rigor, Reproducibility and Transparency Using Gamification

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Kaizen-Education Software Platform

- Gamification is the use of game elements in non-game applications to improve user engagement and experience

- Gamification is most effective when it combines both intrinsic (self-efficacy, personal challenge, problem solving, socialization, etc.) and extrinsic (achievements, points, badges, reputation, etc.) rewards

- Kaizen-Education is a flexible web-based educational software coupled with a smartphone app which integrates gamification principles to enhance learner engagement

- Kaizen-Education that allows educators to build custom games where learners compete for extrinsic and intrinsic rewards

- To date, over 22 disciplines have created 146 educational games. 11,191 distinct players have been registered who collectively have answered 260,966 questions

Rigor, Reproducibility and Transparency

- Are NIH cornerstones for scientific advancement

- To teach these principles across sites in the broad scientific consortium of the UAB CCTS Partner Network we created a 4-week online course on the Kaizen-Education Software

- Our goal was to provide essential training in a novel and customizable approach, in a scalable way across multiple institutions in the UAB CCTS Partner Network

- Successful implementation across out geographically diverse partner network would serve as proof of concept for future dissemination of this innovative educational approach across the national CTSA consortium

Figure 1: Kaizen-Education
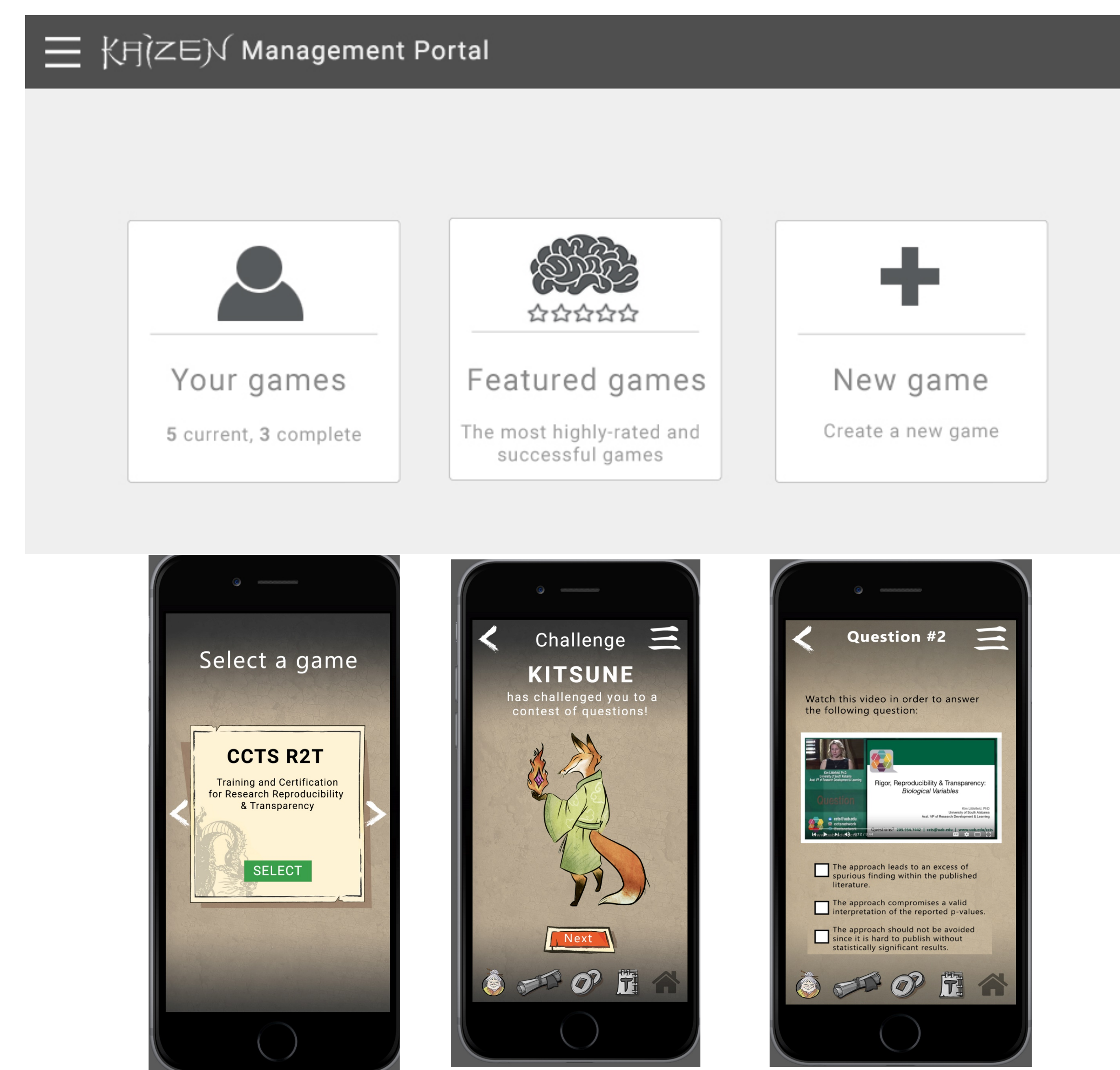
- Games are built on the customizable Management Portal. Games can be played on the app or website

Figure 2: Customizable Rewards

Level Badge:
Ur--ine the game!

Hotstreak Badge
You're on a roll

Marathon Badge
Like an overnight intern looking at breakfast bagels, nothing can stop you!

- Individual and Team badges can be uploaded by game creators with custom art, phrases and point values.

Rigor Reproducibility Transparency Game

- Game consisted of 4 modules; (1) How scientists fool themselves/scientific premise; (2) Authentication of chemical and biologic variables; (3) Statistical rigor and (4) Comprehensive Review

- 1-2 articles sent weekly for participant review with 5 multimedia questions (embedded video, text, or hyperlinks to articles) were released midweek. Questions were timed, and participants competed as individuals and in teams

Results

- In calendar 2017, our Rigor Reproducibility and Transparency game was conducted 5 times with participation of 126 researchers across 9 institutions (46% from outside UAB)

- 87 enrollees completed the full course and 80% achieved passing marks (answered ≥75% of questions correctly) in their first attempt and 20% in their second attempt

- Distribution of completing enrollees across the UAB Partner Network was 48 UAB, 13 Auburn, 5 Univ. of AL, 5 Hudson Alpha, 4 Tulane, 1 Univ. of S. AL, 2 LSU and 1 Southern Research Inst.

Discussion

- This software based gamification enhanced course was broadly accepted, engaging learners from different disciplines and career stages across our Partner Network Institutions

- Kaizen-Education provides educators with a powerful tool to use competition and/or collaboration to disseminate knowledge, engage learners and save time through the reuse of game content. In addition, analyses of data generated by games provides insight on how to maximize learning, opening the door to educational analytics