

AAI Education Committee Highlight: Teaching Tools

In 2016, the AAI Education Committee initiated a new session focused on improving immunology education: the Immunology Teaching Interest Group (ITIG). The ITIG is an informal group comprised of past speakers and attendees of the ITIG sessions, including current immunology educators spanning a range of institutions and levels. It serves as a resource for novel teaching tools and practices that can be implemented in courses to enhance immunology education. The session has grown from an audience of 20 in 2016 to more than 200 participants today. Because of the great interest in this topic, the AAI Newsletter features "Teaching Tools" articles highlighting ITIG presentations.

Improving the Combined Use of Voiceover Slide Presentations and Review Games



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Active learning pedagogies have been increasingly explored to either supplement or replace traditional lectures to achieve better

educational outcomes. The combined use of pre-assigned voiceover slide presentations (voiceovers) and in-class gaming permits students to watch a voiceover at home at a convenient time of their choosing. Class time can then be used to reinforce concepts and achieve higher orders of Bloom's taxonomy by actively engaging students with their peers in friendly competitions, such as Jeopardy-style games. Drawing on the whiteboard or showing review slides can emphasize important concepts and clarify misconceptions after challenging questions have been encountered in a review game.

I currently use voiceovers and gaming for medical students with class sizes of approximately 100 students. I use Camtasia to make immunology voiceovers, as I enjoy the editing features to add highlights, arrows, or drop images into the PowerPoint slides. Other recording options, such as Panopto, exist and can be considered as well. If making voiceovers is deemed too labor intensive, faculty can use reading assignments, handouts, or alternate voiceovers available on the internet as pre-assigned work to enable more frequent use of review games in the classroom.

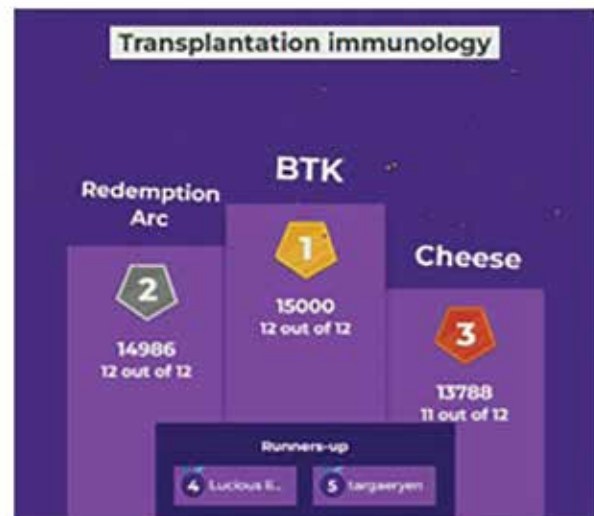
I previously published a Jeopardy review game (doi.org/10.15766/mep_2374-8265.10485) that uses team clickers and a team leaderboard, which enable all students to actively consider each question in groups of five to six, even if the class size is more than 100 students. This game can be used with team clickers, but should be carefully reworked for individual instructors' needs and clicker

Mucosal Immunity I	Mucosal Immunity II	Mucosal Immunity III	Food allergies	Celiac Disease
\$100	\$100	\$100	\$100	\$100
\$200	\$200	\$200	\$200	\$200
\$300	\$300	\$300	\$300	\$300
\$400	\$400	\$400	\$400	\$400
\$500	\$500	\$500	\$500	\$500

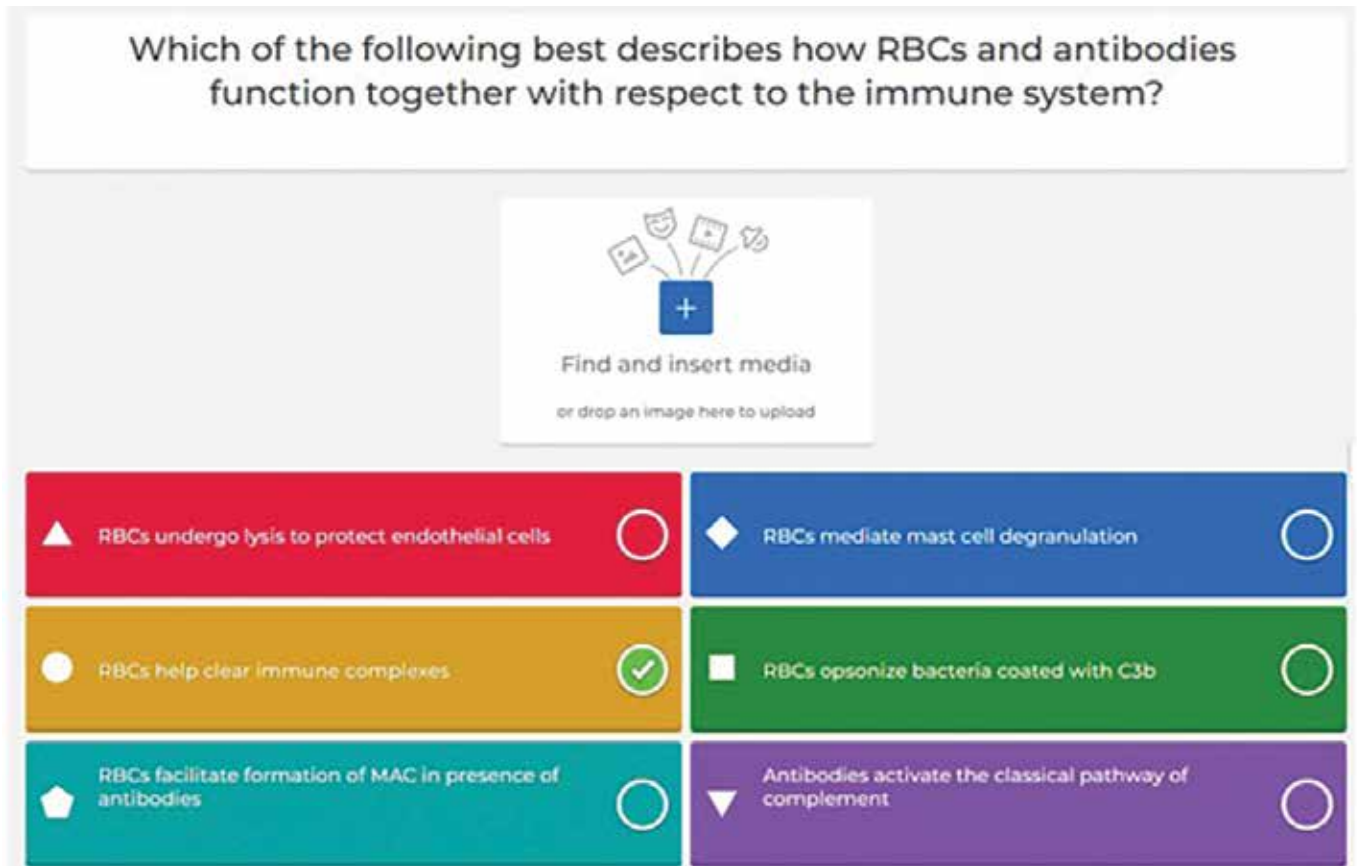
Jeopardy-style game

technology. Additional platforms for team competitions using team clickers and team leaderboards are now available. For example, one includes the advantage of permitting teams to periodically wager points on questions (<https://turningtechnologies-5.wistia.com/medias/w1r5f49fax>), which helps keep all teams engaged.

Kahoot review games are another web-based platform that can be used either in the classroom or virtually and permits students to use cell phones instead of clickers.



Kahoot leaderboard



Sample question from a review game

The character limits associated with Kahoot can be circumvented by importing slides containing longer stems and answer choices; importing review slides can help emphasize important concepts after a question has been considered. I used Kahoot virtually by streaming the muted game (to prevent audio feedback) through BigBlueButton and using Zoom breakout rooms to permit students to compete as teams.

We have been conducting an IRB-approved study to obtain feedback from medical students, and the students overwhelmingly prefer the combined use of voiceovers and gaming versus traditional lectures. Additionally, students overwhelmingly favor multiple short voiceovers (e.g., up to 15 minutes) over longer voiceovers, and appreciate having simple, recall-type questions embedded within

the voiceovers. Furthermore, students prefer beginning the in-class session with a question-and-answer review of the main topics covered in the voiceover before beginning the review game. We are currently using formative exams to ascertain whether the combined use of voiceovers and gaming leads to better outcomes versus lectures.

In summary, students strongly prefer gaming over traditional lectures, and the use of voiceovers provides the opportunity to use gaming more frequently. These lead to increased student satisfaction, and we hypothesize they also lead to improved educational outcomes.

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