



University of Michigan Provost's Teaching Innovation Prize

2016 WINNER



SAPAN AMBANI
Clinical Lecturer
Urology
Medical School
sapan@umich.edu

Dr. Ambani would like to acknowledge Dr. Khaled Hafez, Professor and Residency Program Director, along with the Residents of the Department of Urology at the University of Michigan.

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Making Every Second Count With Spaced Questioning Technology

Innovation Description

Time. Urology surgery residents just don't have much left for studying—after performing surgery, caring for patients, and advancing research. Worse yet, cramming doesn't support retention of concepts fundamental to the field (see survey results below). Fortunately, personalized learning technology can a) keep track of what material each student has mastered and b) schedule periodic testing of remaining content. Best of all, spaced questioning can actually increase retention up to two years.

Here's how it works. At any spare moment, residents access a web-based app, answer two daily questions, and immediately see their results and an explanation. (Question sequencing follows a two-year curriculum, so that questions about kidney stones appear when residents begin learning about them.) A correctly answered question returns after 6 weeks and, if answered correctly a second time, it is retired from that student's question bank. Incorrectly answered questions return after 2 weeks.

UroStream is housed within Qstream, a commercial learning platform. Instead of writing code, faculty members can focus on selecting critical material, developing questions, and monitoring aggregate and individual response patterns. Delegating question management work to software makes the most of scarce faculty and resident time.

<https://qstream.com/company/brain-science/>

Student Comments

"Even on the busiest clinical day, we are able to reinforce our learning with these questions."

"The UroStream app sends us two questions per day that can be answered at any time, making it super convenient to use."

"The questions allow you to identify weaknesses and knowledge gaps prior to taking the annual nationwide urology in-service exams, and previous areas of concern became my highest performing areas."

The fun questions "trigger healthy competition among residents aiming to earn the most points and the most correctly answered questions."

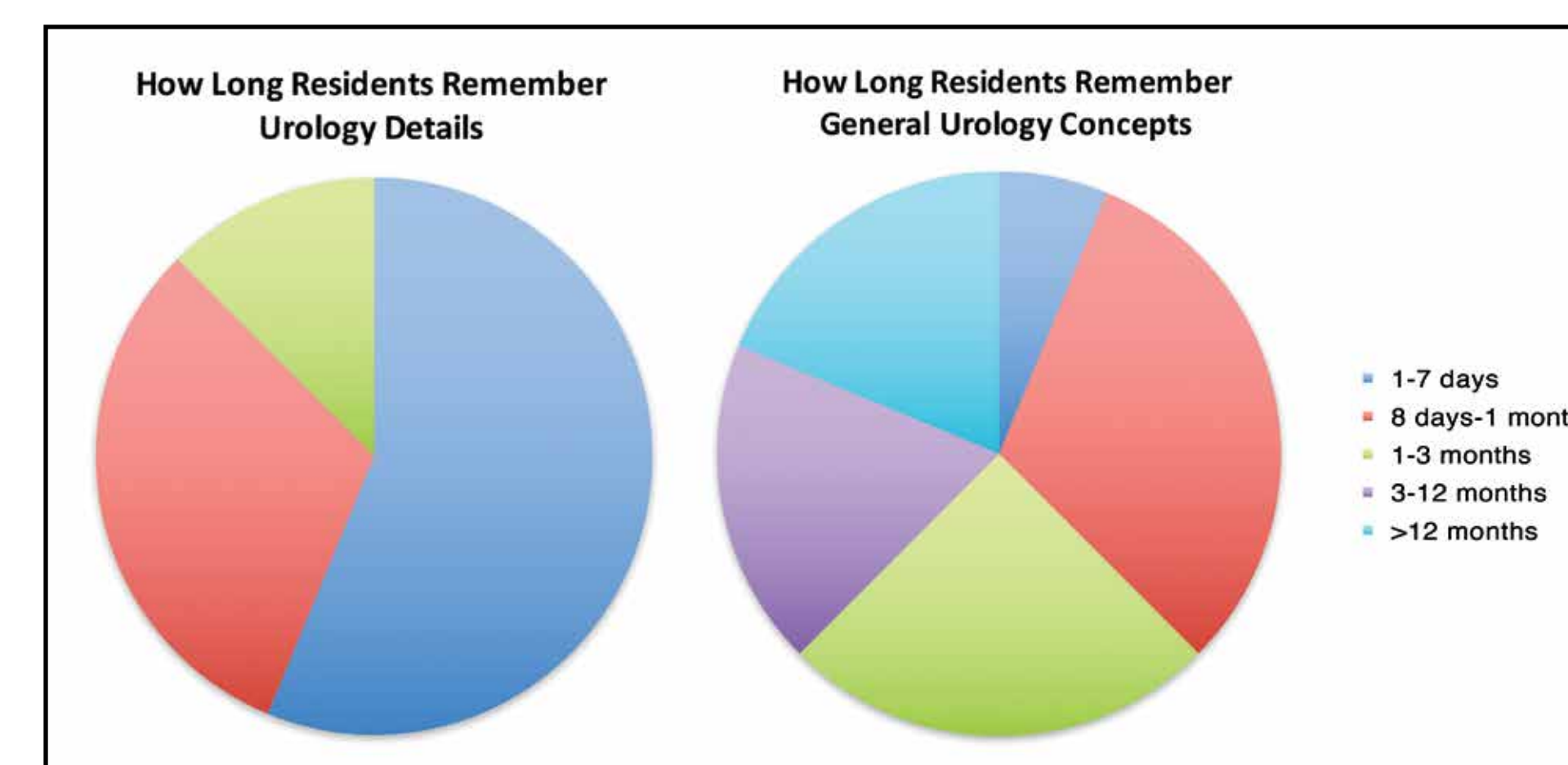
"I find myself reading more because these are open book questions."

"I believe I speak for all residents when I say that this has truly made studying more efficient, easier, and fun."

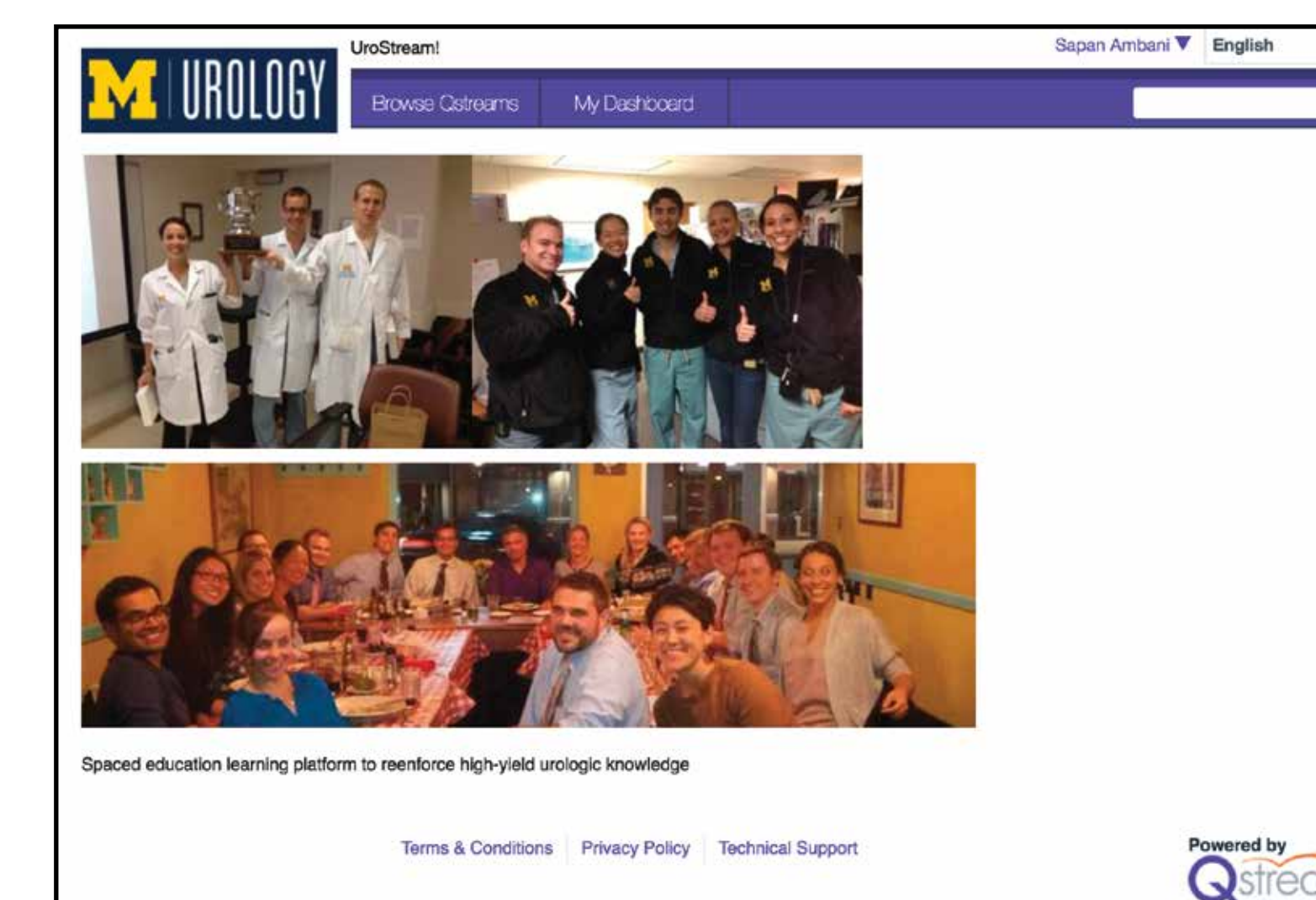
"Questions reinforce information that we learn during lectures and in the operating room."

"Doing these questions regularly increased my inservice exam score from mid-70s last year to the 90th percentile this year."

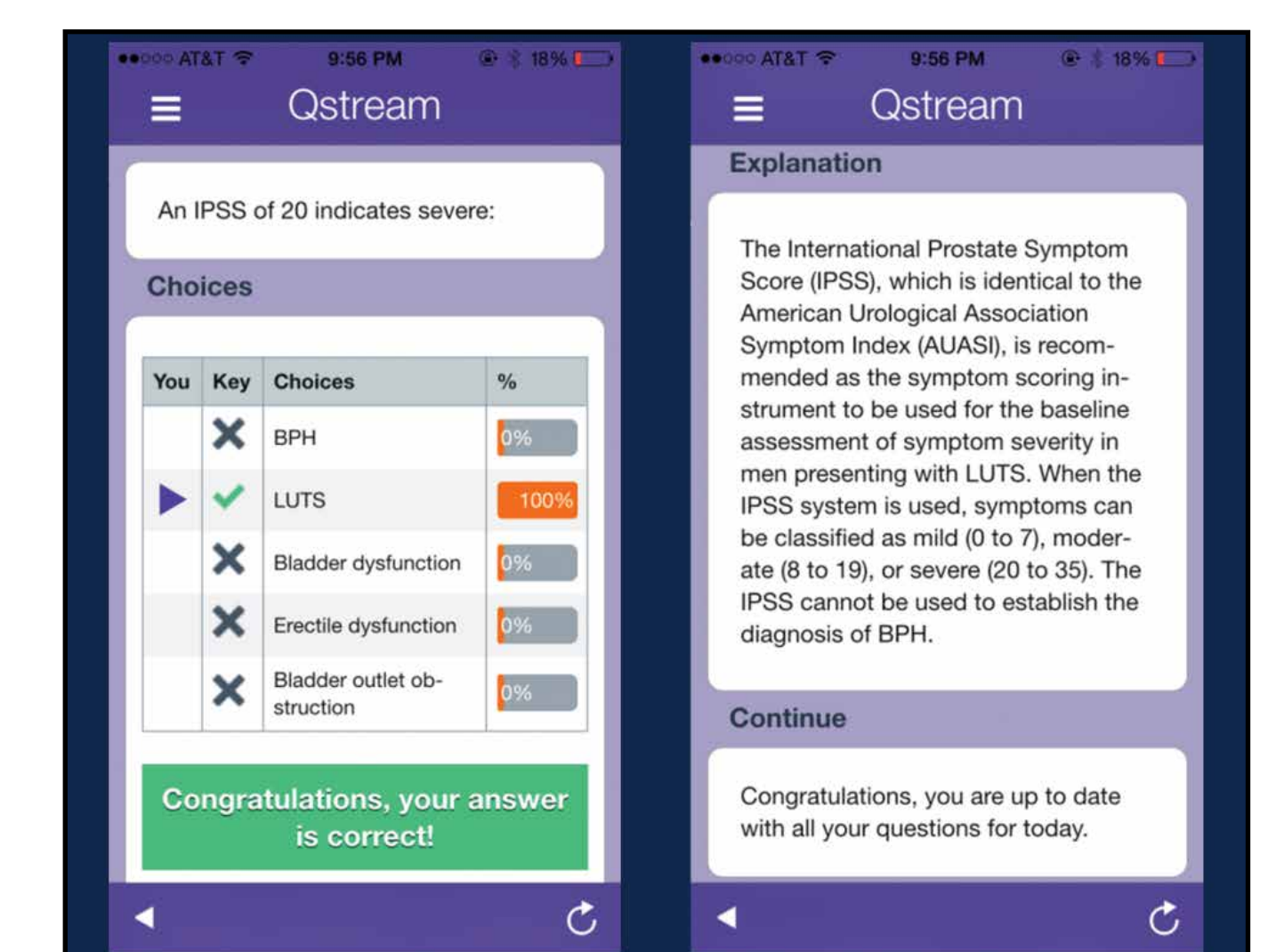
Examples of Teaching Innovation



An internal survey of residents (before UroStream) revealed that 90% forgot details within a month, and 60% forgot general concepts within three months.



This screen capture shows the UroStream interface.



UroStream has two banks of 133 questions each, allowing more advanced students to receive more difficult questions.