Impact of an Interactive Audience Response Platform on Medical Student Learning in Pharmacology

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INTRODUCTION: The purpose of this study was to explore the educational value of integrating Hotspot, an interactive audience response technology, into preclinical medical pharmacology curricula. Specifically, the study investigated whether the use of Hotspot during pharmacology lectures enhances student engagement and perceived learning compared with traditional multiple-choice questions in a large-group instructional setting. Hotspot is an interactive audience response system powered by PointSolutions that allows students to answer questions by selecting areas of interest on images and figures, rather than choosing from predefined multiple-choice options. This approach to active learning is designed to foster real-time participation and promote higher-order thinking during lectures.

METHODS: In this IRB-approved study, faculty members incorporated pharmacology-related Hotspot questions into the lectures of first- and second-year medical courses across three different matriculating classes at California Northstate University College of Medicine. Following these sessions, students completed an anonymous survey administered electronically via SurveyMonkey. Survey items assessed student perceptions of engagement, learning, and ease of use on a 7-point Likert scale.

RESULTS: Students reported that Hotspot technology made it easier to pay attention during lectures (average Likert score of 5.93 out of 7, n=102). They expressed interest in adding more Hotspot-style questions (5.70 out of 7, n=102), and felt the questions were a good use of class time (6.18 out of 7, n=102). Students also indicated that the interactive format challenged them and reinforced their understanding better than standard multiple-choice questions (5.67 out of 7, n=102).

DISCUSSION: Students expressed a preference for Hotspot questions over traditional multiple-choice formats and reported that this approach better prepared them for exams. Study participants encouraged the integration of Hotspot technology and viewed it as both convenient and highly effective. These findings support the incorporation of active learning strategies to enhance student engagement and promote deeper comprehension of the preclinical pharmacology material. This study provides evidence to support the adoption of innovative, active-learning instructional approaches in pharmacology education.