A Clinical Skills Dashboard for Medical Student Assessment

Purpose: Programmatic assessment is an approach in which information about a learner's competence and progress is continually collected and analyzed, to provide continuous feedback to the learner and to allow for high-stakes decision-making at the end of a training phase. This is part of a broader move in medical education towards a competency-based assessment framework. This model is also based on self-directed learning and may fail without clear and accessible data on the learner's performance and growth.

Objective: For the purposes of programmatic assessment, our team sought to create a clinical skills performance dashboard for first year (MS-1) medical students as a promising approach to display learner competency to both students and faculty members tasked with teaching, coaching, and/or assessment.

Methods: A team consisting of an instructional designer, two clinician educators, and an assessment team created a learner performance dashboard to track clinical skills progress among MS-1 students. The dashboard displayed several clinical skill outcomes from multiple assessments over time in four categories: communication, physical examination, oral presentation, and medical documentation. The design team conducted two sets of low-fidelity mockup sessions with volunteers from the MS-1 class and faculty working with these students, with 5 students or faculty in each session. During these sessions, students and faculty gave feedback on the layout, design, and functionality of the dashboard. We then conducted "think-aloud" sessions with MS-1 students and faculty during which users individually navigated through the dashboard and gave further feedback on the usability and navigability of the dashboard. We made modifications to the dashboard in an iterative fashion based on this feedback to create a final version of the dashboard.

Results: In the low-fidelity mockup sessions, students expressed that they wanted to view both an overview of their performance over time as well as specifics on areas of strength and areas for improvement. All stakeholders wanted the ability to navigate the dashboard from a broad view of aggregated data down to item level specifics. Opinions differed about the usefulness of displaying passing cut points for assessments and average class performance. Faculty preferred seeing comparative markers across students, while students preferred seeing their own performance data without comparisons to peers.

Conclusion: Our team learned many important lessons throughout this process. First, we had initially anticipated a 4–6-month time frame for the design and modification of the dashboard, but this process ultimately required 8-10 months. To optimally design the dashboard, our team had to reorganize the assessment data in a way that would integrate with the host server and our dashboard platform, thus requiring significant instructional design support and time.

The creation of the dashboard also helped to identify important assessment gaps. We identified opportunities to improve the validity of the assessment data such as the need for standard setting for the categorization of performance into below, meets and exceeds expectations and the need for inter-rater reliability for the scoring of clinical skills."