monthly seminar series, multilevel mentoring, targeted coursework, and networking. METHODS/STUDY POPULATION: Over 10 program years, we collected survey data on characteristics of CEED Scholars, such as race, ethnicity, and current position. We created a matched set of URB trainees not enrolled in CEED during that time using propensity score matching in a 1:1 ratio. RESULTS/ANTICIPATED RESULTS: Since 2007, CEED has graduated 45 Scholars. Seventy-six percent have been women, 78% have been non-White, and 33% have been Hispanic/Latino. Scholars include 20 M.Ds and 25 Ph.Ds. Twenty-eight CEED Scholars were matched to non-CEED URB students. Compared with matched URB students, CEED graduates had a higher mean number of peer-reviewed publications (9.25 vs. 5.89; $p < 0.0001$) were more likely to hold an assistant professor position (54% vs. 14%; $p = 0.004$) and be in the tenure stream (32% vs. 7%; $p = 0.04$), respectively. There were no differences in Career Development Awards ($p = 0.42$) or Research Project Grants ($p = 0.24$). DISCUSSION/SIGNIFICANCE OF IMPACT: Programs that support URB researchers can help expand and diversify the biomedical research workforce. CEED has been successful despite the challenges of a small demographic pool. Further efforts are needed to assist URB researchers to obtain grant awards.

2440

Teaching rigor, reproducibility, and transparency using gamification

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OBJECTIVES/SPECIFIC AIMS: The objectives for the Rigor, Reproducibility, and Transparency course within KAIZEN-Edu was to provide a platform that allows essential training, in a novel and customizable approach, for a large number of students across the multiple institutions within the UAB CCTS Partner Network. Successful implementation across this geographically diverse of partner institutions would serve as proof of concept to future dissemination across the CTSA consortium. METHODS/STUDY POPULATION: We used the "build a game" tools within Kaizen-Edu to design the "Rigor and Reproducibility Game." The games consisted of four modules, with 20 questions designed to test participant knowledge, and edify learners on particular concepts through a multimedia approach (embedded video, text, and hyperlinks to articles) with content provided as questions released over 4 weeks. Researchers from across the UAB CCTS Partner Network developed comprehensive modules for (1) How Scientists Fool Themselves/Scientific Premise, (2) Authentication of Chemical and Biologic Resources and Sex and Other Biologic Variables, (3) Statistical Rigor, and (4) Comprehensive Review. A typical week began with review articles (1–2) sent to each participant. The participants are informed that 5 questions will be released midweek testing the key concepts from the papers. When ready, the participant logs into Kaizen-Edu and starts to answer questions/play the game. Immediately, the articles are opened for reference, followed by a brief 4–5 minute video which reinforces key concepts and then timed questions begin. A typical question is allowed 3 minutes (visible countdown clock). Accurate responses result in the addition of points, with double points awarded for correct answers within the questions time limit. No points are awarded for incorrect answers. After each question, a detailed explanation reviews and reinforces the key concepts. Each participants' points contribute to both their individual score and team scores, which influences their position on the Rigor and Reproducibility game leaderboard. RESULTS/ANTICIPATED RESULTS: Within 2017, the Rigor Reproducibility, and Transparency course was conducted 5 times. A total of 126 researchers across 9 institutions were enrolled. A total of 87 enrollees completed the full course, with 80% passing (answering ≥75% of questions correctly) on their first attempt and an additional 20% passing on a second attempt. The distribution of completers across the CCTS Network was UAB = 48, Auburn = 13, Pennington = 10, University of Alabama = 5, Hudson Alpha = 5, Tulane = 4, University of South Alabama = 1, LSU = 2, and Southern Research = 1. Researchers throughout at Partner Institutions represent 46% of the total population trained. DISCUSSION/SIGNIFICANCE OF IMPACT: This software based, gamification-enhanced course was broadly accepted with each session fully enrolled, and learners spread almost evenly between our institution and various Partner Network sites. Our pilot proved that gamification was an effective technique to engage users and produced a high pass rate, suggesting that the content both engaged learners and was effectively internalized. Educational interventions, imbued with principles of gamification provide educators powerful tools that use competition and/or collaboration to disseminate knowledge, engage learners with content, and save educator time as created game content can be reused in additional educational sessions. Analyses of the data trail provided by users engaging with such electronic learning tools will provide educators will insights on how to maximize learning, opening the door to an era of educational analytics.

2007

The clinical research operations program: Educating clinical research staff

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OBJECTIVES/SPECIFIC AIMS: The Clinical Research Operations Program is a free educational program designed to educate clinical research personnel on the conduct of clinical research (CR). The participant completes 16 required core sessions (24 h), 4 elective sessions (4 h), and passes the final exam to receive a certification in CR operations at Stanford. Sessions focus on the 9 domains of CR (established by the Joint Task Force for Clinical Trial Competency), such as Ethical & Participant Safety Considerations, Clinical Study Operations, & Data Management/Informatics. METHODS/STUDY POPULATION: Sessions are taught by volunteer lecturers. Participants may also attend the sessions without pursuing the certification. The program objective is to provide easy-access education in CR in order to increase regulatory compliance, staff retention, and improve CR at Stanford. The program targets CR coordinators, however, staff, postdocs, fellows, and faculty also participate. RESULTS/ANTICIPATED RESULTS: Since the program's launch in January 2017, 119 individuals have enrolled in the certification program. The most represented group is the Department of Medicine. Sessions consistently reach their maximum with a waiting list. Each core session requires that the participant complete an evaluation (Likert scale, 1–5) of the registration process (4.5/5), the class environment (4.6/5), the presented content (4.5/5), and the instructor (4.6/5). Data from these evaluations are positive to date and is used to continually refine the program. DISCUSSION/SIGNIFICANCE OF IMPACT: N/A.

2475

The leveling of clinical research competencies

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OBJECTIVES/SPECIFIC AIMS: Objectives/goals: Describe the process used to develop leveled competencies and associated examples. Discuss the final leveled competencies and their potential use in clinical research professional workforce initiatives. METHODS/STUDY POPULATION: The revised JTFCTC Framework 2.0 has 51 competency statements, representing 8 domains. Each competency statement has now been refined to delineate fundamental, skilled or advanced levels of knowledge and capability. Typically, the fundamental level describes the competency for a professional that requires some coaching and oversight, but is able to understand and identify basic concepts. The skilled level of the competency reflects the professional's solid understanding of the competency and use of the information to take action independently in most situations. The advanced level embodies high level thinking, problem solving, and the ability to guide others in the competency. The process for developing both the three levels and examples involved 5 workgroups, each chaired by a content expert and comprising of national/international clinical research experts, including representatives from research sites, professional associations, government, and industry and academic sponsors. RESULTS/ANTICIPATED RESULTS: The committee developed 51 specific competencies arrayed across 3 levels and examples of each to demonstrate an appropriate application of the competency. The competencies and examples, and potential utilization, will be described. DISCUSSION/SIGNIFICANCE OF IMPACT: The use of competencies in the context of workforce development and training initiatives is helping to create standards for the clinical research profession. These leveled competencies allow for an important refinement to the standards that can be used to enhance the quality and safety of the clinical research enterprise and guide workforce development.

2502

The need for an evidence-based CTS specific IDP for early career training and for a long-term and sustainable career in clinical translational sciences

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OBJECTIVES/SPECIFIC AIMS: To establish a conceptual framework to develop a CTS-IDP with data analytics, and an e-Learning Faculty Development Guide on