They Want Clinical Context and Protocols: Analysis of Engineers' Feedback from a National Segmentation Boot Camp Experience

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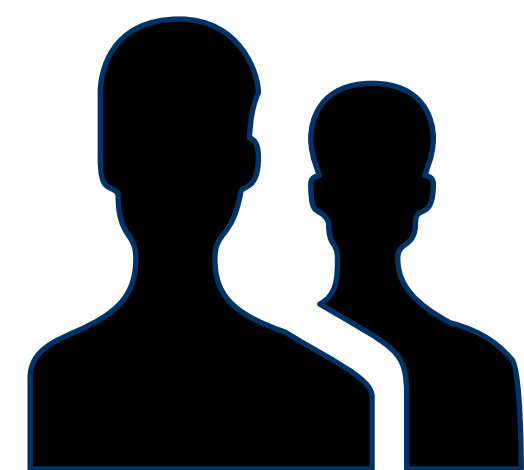[4]Deputy Chief Officer, Healthcare Innovation and Learning, US Department of Veterans Affairs [5]Department of Radiology, University of Washington

INTRODUCTION

- Segmentation is a key step in the creation of patient-centered 3D Printed pre-surgical models.

- VA Office of Advance Manufacturing (OAM) system wide efforts to provide broad exposure to this critical step to engineers (E) and non-engineer (non-E) staff.

- OAM undertook an in-person national segmentation boot camp (SBC) in April 2022.

- Little is known of E or non-E learner needs as it pertains to the critical activity of segmentation training.

- Post-SBC, learners were surveyed as it pertains to the quality of design, conceptual framework, quality of instructors and quality of course experience.
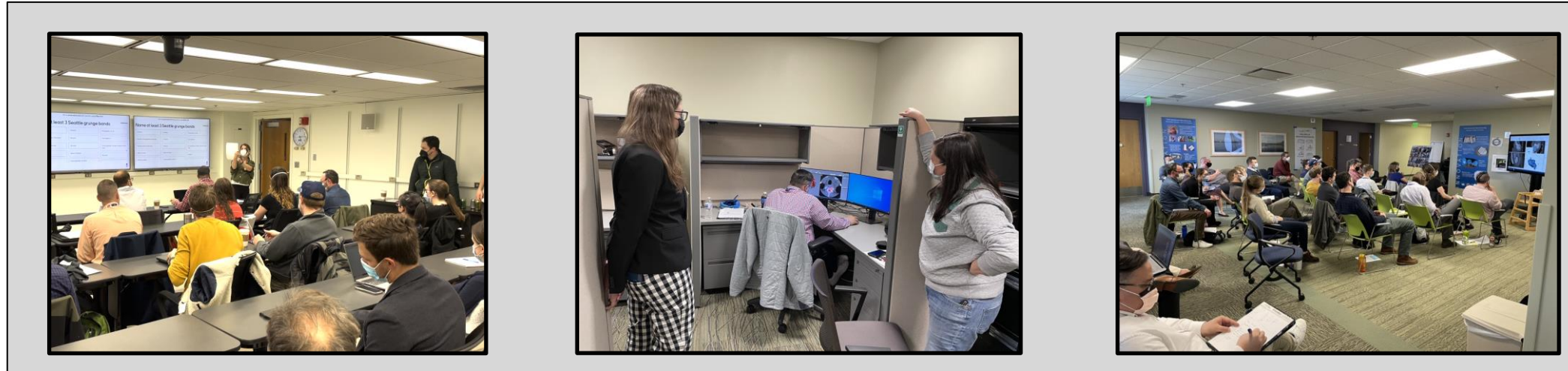
OBJECTIVE

To understand differences in reaction to this training event as it pertains to engineers (E) and non-engineers (non-E).

METHODS

- An anonymous program survey was distributed to all participants of a national two-day SBC.

- Key questions utilizing a 5-point Likert scale (5=strongly agree) questions regarding SBC.

- Minimal clinical content and no ideal protocol were attached to each segmentation task.

- All participants self-designated as an engineer (E) or non-engineer (NE) in the organization.

- Student's t-test* & Fisher's Exact Test** were used.

Quality of Design
- stated learning objectives
- guidelines for daily activities
- aligned activities
- delivery methods
- technology support

Conceptual Framework
- clinical areas presented
- potential future content

Quality of Instructors

Quality of Course Experience
- challenging the learner
- appropriate workload
- cadaveric lab time
- presentation evaluation
- software hand-on sessions
- safe/effective practice
- overall course rating

RESULTS

- A total of 31 participants (79.9 % of total attendees) responded to the survey.

- 54.8% (n=17) self-identified as engineers.

- E compared to non-E scored the educational delivery less effective 3.9 ± 1.0 v. 4.6 ± 0.5; p=0.03*

- There was no statistically significant difference as it pertains to the quality of the course design and the quality of instructors.

SBC was successful …	E n=17	Non-E n=14	p**
… at establishing clinical scenarios	3.6±1.4	4.5±0.8	0.03
… defining segmental protocols	3.8±1.0	4.6±0.6	0.01

DISCUSSION

- First analysis of engineers and non-engineers attending a national segmental boot camp as part of our system-wide educational efforts.

- Our data indicates that self-identified engineer attendees seem to desire clinical context and segmentation protocols when training on segmentation cases.

- When these components are missing from an SBC experience, engineers rate the program's method of educational delivery less than non-engineers.

FUTURE DIRECTIONS

- OAM plans to continue segmental boot camp experiences especially as part of its Quality Management System implementation.

- Future iterations of the curriculum will include pre-program online materials to define segmentation protocols.

- Optional clinical scenarios will also be made available to all applicants especially considering the needs of engineering learners.

- This data should inform educators at the point of care within the 3D Printing space to modify future curricula.