



2024 CAE Community Symposium

# A Practical Assessment of Practical Assessment

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## The issue & the approach

- Labs and other hands-on keyboard exercises allow students to demonstrate competence at realistic tasks
  - Footnote: 28 years in industry as a federal contractor, the number of multiple-choice questions I faced on the job was zero.
- How do we make realistic tasks fit into the structure of an academic course?
  - Final exam limited to 2 hours
  - How do students prepare?
- Can we make a single exercise cover a broad section of the course objectives?
- Note: this is an intro-level course.

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# 2024 CAE Final Exam Development Strategy

- Start with the Social Engineering lab from the textbook
  - Our textbook is **Network Security and Firewalls, 3rd Ed.** by J. Michael Stewart & Denise Kinsey (Jones & Bartlett)
    - ...included the online/cloud labs
- Students prepare by completing the actual lab before the exam time
  - This way they have time to complete the lab without a ticking clock.
  - Submit the lab report as evidence they completed the lab for part of the exam grade
- During the exam, students will repeat parts of the lab exercise and answer questions about the lab and what they discovered.
  - Questions relate to...
    - ...discoveries made during the exercise
    - ...how to leverage what they found in technical attack
    - ...how what they found can apply to cybersecurity principles
  - Some questions involve doing research on the internet relating to the findings.

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## Advantages

- Tests the students' practical skills
- Students don't "cram" for a multiple-choice exam
  - Students really like that!
- Coming into the lab with the lab report means students walk into the exam knowing they have the points for that part of the exam
  - Popular!

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## Is this a true measurement of learning?

- Students are demonstrating practical skills, but...
  - ...the lab portion of the exam is not timed and is performed outside the class.
  - ...the in-class portion of the exam is timed, but involves doing research, so is open internet,
- Exam performance and performance in the rest of the course is moderately correlated ( $r=0.7$ )...
  - ...mostly because students who are weak in other areas of the course can do well on this exam.

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Thank You!



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