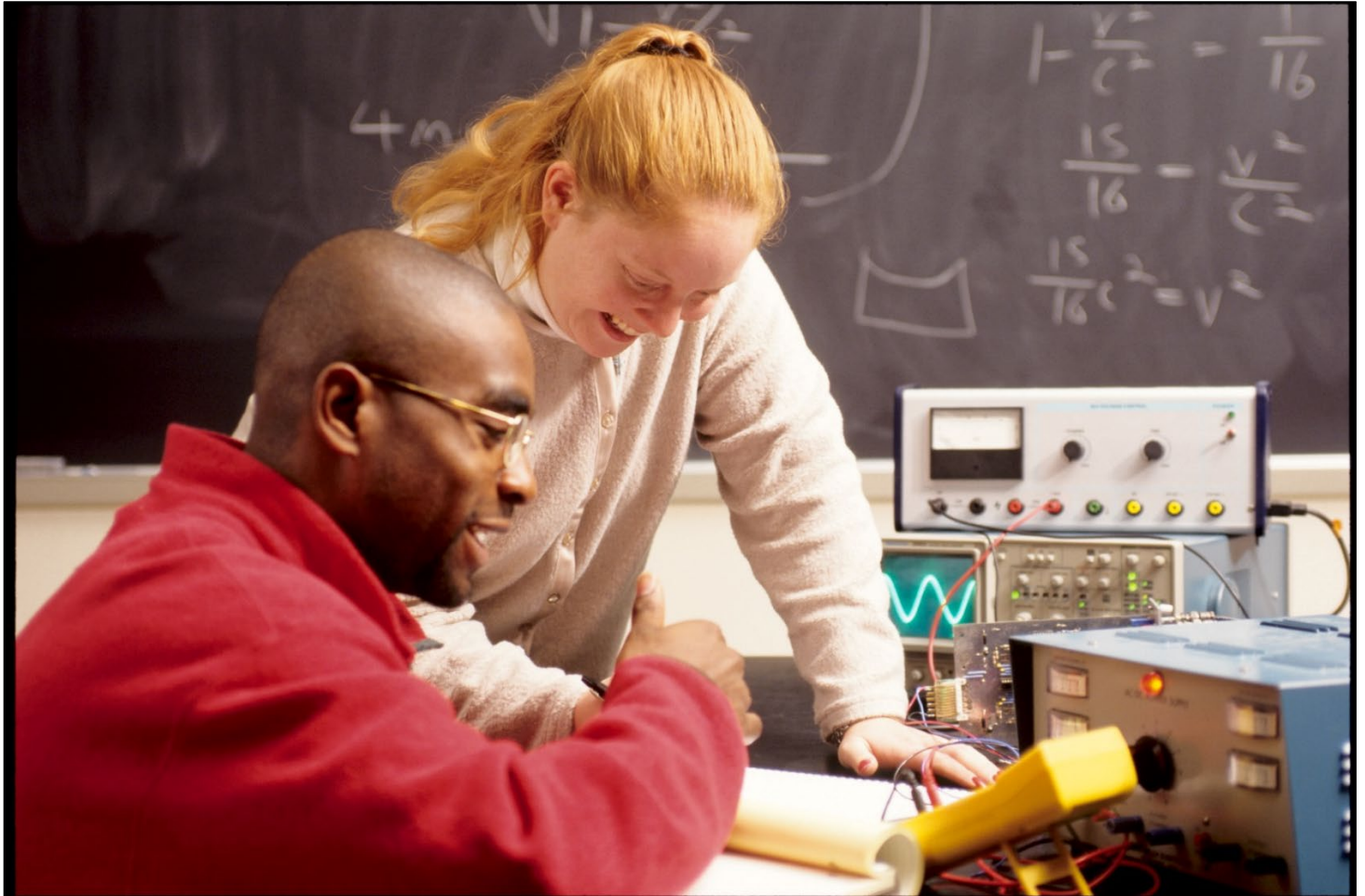


# Scientific Reasoning Competency at Longwood University



**REPORT: SCHEV  
Core Competency  
Assessment & Planning  
for Improvement**

Report Years:  
2018-19 to 2021-22

*Prepared by Longwood SR Competency Faculty Lead and AIR Staff*

# Overview



How is this core competency defined at Longwood?

Students will be able to use scientific reasoning to address a variety of questions in context.

SLO1: use scientific theories, scientific models, and empirical evidence to describe and make predictions about natural phenomena.

SLO 2: use the scientific method, which includes making objective observations, asking scientific questions, formulating hypotheses, identifying relevant variables, planning and carrying out investigations, evaluating data, and drawing evidence-based conclusions.

At the completion of the Pillar course, students will be able to:

SLO3: evaluate the quality and validity of scientific information on the basis of its source and methods used to generate it.

SLO 4: describe how scientific reasoning is used to address significant contemporary issues with regard to social, cultural, and/or ethical considerations



How are Longwood students able to develop the knowledge and/or abilities expected of this competency?

Civita Core SR designated Pillar courses provide experiences and activities to develop knowledge and abilities.



## How do we know whether and how well students have achieved the competency?

Madison Assessment SR-9 Scientific Reasoning Test is used to measure student performance on the four student learning outcomes. Courses use a day to administer this computer-based assessment.

Test questions are mapped to the four Longwood student learning outcomes.

*Expected Level of Success*

70% target score for each of the four student learning outcomes



*Competency Assessment Results*

	2018-19	2019-20
SLO 1	61%	59%
SLO 2	69%	67%
SLO 3	57%	56%
SLO 4	65%	63%
Overall	65%	64%

# Key Findings



## Validity Check

An analysis should be performed to check the validity of SR-9 test items with respect to Longwood student learning outcomes.



## Outcome Revision

Based on the analysis, Longwood SR outcomes may need to be edited and/or revision in assessment method.



## Professional Development

Plan for professional development for faculty discussion of best practices in SR instruction.

# Next Steps

How is Longwood using information to improve students' educational experience and enhance future achievement of the competency?

Action Item



STATISTICAL ANALYSIS WAS PERFORMED TO CHECK FOR VALIDITY OF THE MADISON SR-9 ASSESSMENT FOR TESTING LONGWOOD OUTCOMES



SR FACULTY MET AND REVISED THE LONGWOOD OUTCOMES AND IN 2022-23 WILL WORK WITH MADISON ASSESSMENT STAFF TO CREATE STRONG ALIGNMENT BETWEEN OUTCOMES AND TEST ITEMS FOR FALL 2023 ADMINISTRATION



Action Item

Action Item



FACULTY PROFESSIONAL DEVELOPMENT 3-HR WORKSHOP WAS HELD TO SHARE BEST PRACTICES IN TEACHING SCIENTIFIC REASONING BY OUTSIDE EXPERTS