

Competency: To apply the Scientific Method

Competency Description: Northwestern has a broadly based core curriculum that is critical to the University’s mission and consistent with the Louisiana Board of Regents requirements for general education. The competency “to apply the scientific method” requires undergraduate students seeking a bachelor’s degree to take nine (9) credit hours of science. One of those science courses must be a biological science course which can be either BIOL1010 – Biological Principles I (for science, mathematics, and psychology majors), BIOL2250 – Human Anatomy and Physiology I for Nursing and Allied Health Majors (for nursing and allied health majors), or SCI1020 – Basic Concepts of Biological Science I (for all other majors).

Student Learning Outcome: Students completing BIOL1010, BIOL2250, or SCI1020 will be able to recognize the components of the scientific method and apply that knowledge to an experimental system.

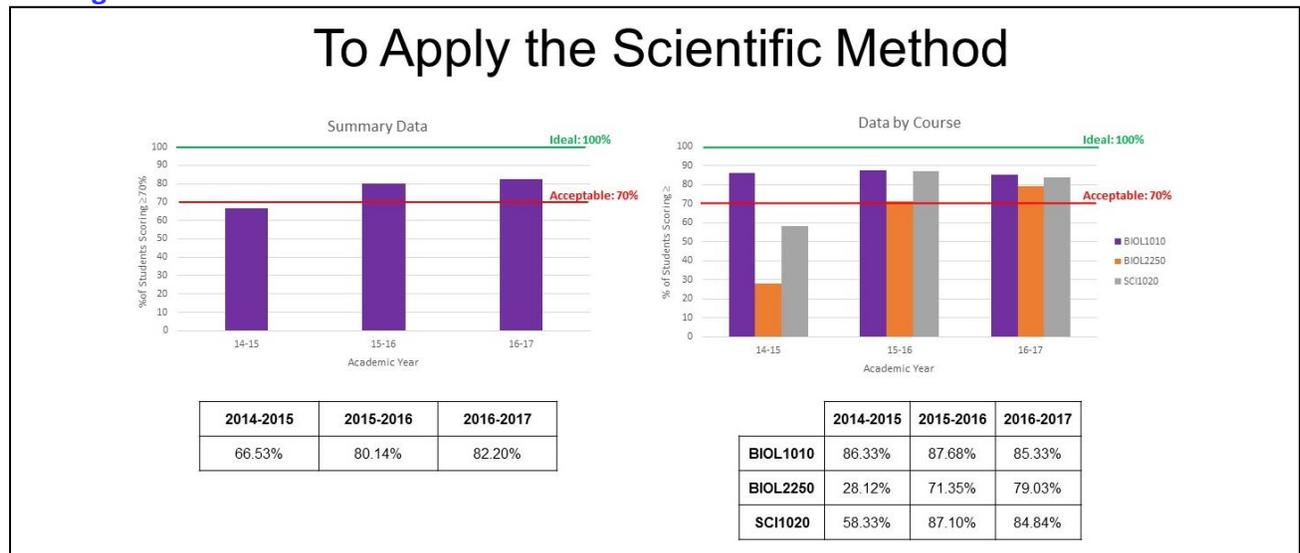
Measure (including methodology and target).

Students in BIOL1010 (Biological Principles I), BIOL2250 (Anatomy and Physiology I for Nursing and Allied Health Majors), and SCI1020 (Basic Concepts of Biological Sciences I) must complete a quiz on their understanding and application of the scientific method. The students must read a passage describing an experimental model system then answer questions relating to the passage and the application of the scientific method.

The acceptable target for this measure is that 70% of the students completing the quiz will earn a 70% or better.

The ideal target for this measure is that 100% of the students completing the quiz will earn a 70% or better.

Findings:



Northwestern State University students in BIOL1010, BIOL2250, or SCI1020 are required to complete a quiz assessing their knowledge and application of the scientific method as a measure of the University's core competency "To Apply the Scientific Method". This assessment is the responsibility of the School of Biological and Physical Sciences. The target for this core competency is that 70% of the students in the indicated courses will score $\geq 70\%$ on the quiz. For the past three academic years, 66.53%, 80.14%, and 82.20%, respectively have scored 70% or better on the assessment with BIOL1010 students (science majors) always scoring higher than either BIOL2250 (nursing and allied health majors) or SCI1020 (non-science or nursing/allied health majors) students.

Analysis:

AY 14-15: During the Fall 2014 and Spring 2015 semesters, the "To Apply the Scientific Method" assessment was administered to 239 students at Northwestern State University. Of those students, 159 (or 66.53%) scored 70% or better on the assessment. With more in-depth analysis of the data, we see that 86.33% of BIOL1010 students, 28.12% of BIOL2250 students, and 58.33% of SCI1020 students scored 70% or better on the assessment. This analysis indicates that while we are approaching our acceptable target of 70% viewing the group as a whole, there is great disparity among the students of the different groups. Therefore, the faculty of the Department will work to improve information delivery on the topic and use repetition of to encourage greater learning.

AY 15-16: During the Fall 2015 and Spring 2016 semesters, the "To Apply the Scientific Method" assessment was administered to 423 students at Northwestern State University. Of those students, 339 (or 80.14%) scored 70% or better on the assessment. With more in-depth analysis of the data, we see that 87.68% of BIOL1010 students, 71.35% of BIOL2250 students, and 87.10% of SCI1020 students scored 70% or better on the assessment. This analysis indicates that while we exceeded our acceptable target of 70% viewing the group as a whole as well as in individual groups. Given that this was our first time achieving our acceptable target goal, we will continue with the assessment to verify that we can consistently meet our target.

AY16-17: During the Fall 2016 and Spring 2017 semesters, the "To Apply the Scientific Method" assessment was administered to 1,348 students at Northwestern State University. Of those students, 1,108 (or 82.20%) scored 70% or better on the assessment. With more in-depth analysis of the data, we see that 85.33% of BIOL1010 students, 79.03% of BIOL2250 students, and 83.84% of SCI1020 students scored 70% or better on the assessment. This analysis indicates that while we exceeded our acceptable target of 70% viewing the group as a whole as well as in individual groups. Therefore, the faculty of the Department will change the administered quiz to improve our assessment of our students' understanding and application of the scientific method.

Decision / Recommendation.

Because the target for this competency has been exceeded for two consecutive years (2015-2016 and 2016-2017), the School of Biological and Physical Sciences has moved to modify the assessment. The new "To Apply the Scientific Method" core competency assessment will focus more on conceptual application of the scientific method. This new assessment will be piloted during the Summer 2017 semester, and the target will be increased to 80% of the assessed students will score 70% or better on the quiz.

The above data is from Taskstream TK20, the University's assessment management system.