

2020 – 21 & 2021 - 22 General Education Executive Summary

Department: Natural & Computer Sciences **Date:** May 19 2022

Members involved with analysis of artifacts: Robert Hermann, John Jurchen, Kristy Jurchen, Marcus Gubanyi, Kent Einspahr, Dennis Brink, Kregg Einspahr, Kim Clark

See General Education Assessment Plan for:

a) Learning Outcome; b) Background; c) Question(s); d) Methodology

Analysis of artifacts:

1). **PERFORMANCE CRITERIA*** - *How was data analyzed? (attach rubrics/scoring tools if used).*

Artifacts were analyzed according to the attached rubric. Rubrics were sent to the faculty beforehand for review, and the departmental faculty met together and scored the artifacts through discussion and consensus.

Summary of RESULTS*:

1). *Restate the assessment question(s) (from the Assessment plan):*

Can students demonstrate an appropriate level of knowledge of important facts, concepts, or processes in the scientific area. Specifically, do students know basic facts, concepts, and processes at a sufficient level to correctly describe them?

2). *Summarize the assessment results. A narrative summary is required. Charts, tables or graphs are encouraged but optional.*

Overall 64 artifacts were assessed, from AGRI 102 (5), CHEM 109 (15), CS 131 (10), LUKE 305 (11), and SCI 331 (23). The table below shows the course, the number (N) of artifacts assessed, the number of artifacts achieving various scores, and the percentage of artifacts achieving a score of at least a 3, and the percentage achieving a score of at least a 4.

Class	N	1	2	3	4	5	% ≥ 3	% ≥ 4
AGRI 102	5	0	0	2	1	2	100	60
CHEM 109	15	4	1	7	3	0	67	20
CS 131	10	1	1	3	2	2	80	50
LUKE 305	11	0	1	0	2	8	91	91
SCI 331	23	0	2	3	12	6	78	91
Aggregate	64	5	5	15	21	18	84	61

3). **INTERPRETATION*** - *Discuss how the results answer the assessment question(s).*

Overall the department succeeded in its goal of having 80% of students achieve a score of 3 or better, but we did not attain our aspirational goal of having 80% achieve a score of 4 or better. Most of the classes individually (except for CHEM 109) achieved the basic standard on their own, and one (LUKE 305) achieved the aspirational standard, with SCI 331 coming close. In each case, the items assessed were facts that were emphasized in class, and students were usually told that these facts would be on the assessment instrument, so it is a relief that most of the students could communicate this important knowledge, at least minimally. We had hoped that more students could communicate the knowledge more correctly and completely and so achieve a 4 on the assessment. We determined that students are indeed able to communicate a minimum knowledge, especially if it is emphasized in class and they are told that they will be expected to know it. We see clearly that we need to intentionally stress and repeat an idea if we want students to be able to know and communicate it. We found that perhaps the greatest issue is of communication – students may know an idea but cannot always communicate it clearly and completely.

4). *Observations made that were not directly related to the question(s). (i.e. interrater reliability of the scoring tool was low)* A speculation is that in an effort to get an “authentic” assessment of student ability in science classes, instructors are much more likely to ask questions that require in-depth analysis and synthesis (plus a little knowledge along the way), and then grade the questions on a scale that reflects how much scientific thought overall the student demonstrated. This means that a student who knows very few facts but understands ideas can still do fairly well, even though they may get answers partly wrong due to not knowing all the specific facts. So instructors may not be requiring a sufficient base of knowledge in order to pass a class.

Sharing of Results: *When were results shared? Date:* May 18, 2022

How were the results shared? (i.e. met as a department) Met as a department and shared via email.

Who were results shared with? (List names): Robert Hermann, Brent Royuk, Kristy Jurchen, John Jurchen, Kregg Einspahr, Connie Callahan, Kyle Johnson, Jen Freund, Kent Einspahr, Marcus Gubanyi, Kim Clark

Discussion of Results –Summarize your conclusions including:

1. **ACTION***- *How will what the department learned from the assessment impact:*

a. *Teaching:* Instructors will emphasize in their classes the need for students to learn (and memorize) important facts and knowledge as a part of their education.

b. *Assignment/course:* Instructors will practice assessing factual material more on in-class tests and quizzes, and give students opportunity to practice through more questions about facts in in-class discussion.

c. *Program:* We will consider the extent to which we emphasize and value knowledge versus other areas like analysis and problem-solving.

d. *Assessment:* Click or tap here to enter text.

2. **IMPACT***- *What is the anticipated impact of the ACTION* on student achievement of the learning outcome in the next academic year?* There is always some recognition while assessing artifacts that we may not have chosen the best class or the best artifact to assess. We will work to ensure that the artifacts we are collecting best reflect the question we are assessing.

3. **BUDGET IMPLICATIONS** – *Indicate budget requirements necessary for the successful implementation of the ACTION* (i.e. an additional staff person, new equipment, additional sections of a course).*
None

If action is taken – it is recommended that the same learning outcome and assessment plan be used for a second assessment cycle.

What assessment questions related to the learning outcome would the program like to investigate in the future? The same question as last year.

Submitted by:Robert Hermann **Assessment Committee Reviewed:** 6/14/22

Department Chair notified – approval/additional action needed: Approved 6/14/22.

BUDGET IMPLICATIONS – Assessment Committee Chair notified appropriate Dean: na