Q20.

IU Kokomo Program Assessment Tool

Thank you for supporting IU Kokomo's efforts at ongoing assessment of student learning and educational quality assurance.

It is recommended that reporters compose their answers to the various questions in this reporting survey, prior to actually entering the survey. An accompanying Word document with all questions is available from the Director of Assessment.

All data collected will be compiled and reviewed by the Faculty Senate Assessment Committee and the campus Director of Assessment. Report will be made to the Faculty Senate regarding areas of strength and weakness of assessment on campus each Spring semester. Members of the Assessment Committee may request additional information from units to aid review.

Units reporting student performance on program learning outcomes that is significantly below expectations will be re-examined in the next cycle.

Q21. Please provide your name and academic unit.

School of Sciences

Q1. What reporting cycle are you reporting assessment data for? For example, 2014-2015, 2015-2016, etc.?

2015-2016

Q26. Briefly describe the learning outcome(s) you are reporting on for this cycle. If you have submitted a full copy of your program assessment plan to the Director of Assessment, you may use your numbering system from that document to identify the learning outcome of interest (i.e., We are reporting on learning outcome 2.4, Writing Effectively, described on page 7 of our assessment plan). You may also note specific components of learning outcomes in your description.

Assessment was conducted in MICR-M 310 to address the goal 3: Impact on biodiversity, using outcome 2: The students will evaluate the implications of human modification of the environment. The component was "evaluation". Assessment was also conducted in PHSL-P 416 to address goal 4: Unifying principles within biodiversity, using outcome 1: The students will explain similar/identical features of living systems.

Q25. If you have previously assessed that/those learning outcome(s), when did that assessment occur, and what was your main conclusion from that assessment? What change(s) did you implement in teaching, curriculum, or other aspects of your program to address any weaknesses your assessment revealed?

Goal 4, outcome 1 was previously assessed in 2008-09. At that time, the benchmark was met (78%). This is an area in the biology curriculum (unifying principles within biodiversity) which is emphasized in many courses. Thus, it is not surprising that the students performed well.

Q3. Briefly describe how you measured student learning on the program learning outcome(s) you noted, in this cycle. Also, describe the course(s) or setting(s) where the assessment took place.

For example, quizzes/tests/exams (or selected questions on quizzes/tests/exams), written papers, or presentations from specific courses, or standardized tests given at specific points in the program, are common student artifacts that are used in learning assessment.

Assessment was conducted in MICR-M 310. The activity consisted of a comprehensive question in the final exam. The performance characteristics were correct/incorrect, and the benchmark was at 70%. The question (#26 – final exam) was the following: 26) As per the diagram below, an oil container has been leaking oils (fuel hydrocarbons) into the soil and groundwater at a certain site. The oils are dissolving into groundwater and spreading with groundwater flow. Near the spill site, the groundwater has turned anaerobic (methanogenesis, sulfate reduction, iron reduction, and denitrification). Further away from the spill site, the contaminant is diluted enough to allow some oxygen to mix in with the groundwater and to create aerobic conditions. Although the oils are being diluted by the groundwater flow, it would appear that very little oil is being degraded in the short-term under these conditions. The groundwater temperature is at about 15° C. What would you propose to do to ensure the cleanup of the site and of the groundwater? Explain. (10 points) The question requires a variety of interpretations of the information, especially regarding how to modify the environment to achieve "bioremediation". It also requires some critical thinking about how to answer correctly. Assessment was also conducted in PHSL-P 416. The activity consisted of a lecture exam question. The physiology of all living organisms involves the exchange of both material and energy (heat) between the organisms' cells and the surrounding environment. The rates at which both material and energy diffuse between the interior of an organism and the exterior, as well as from one location within an organism or within the environment, are influenced by a number of different factors as described in Fick's Law and various derivations of Fick's Law. As such, understanding Fick's Law is fundamental to understanding the function of living systems from the molecular level to the ecosystem level. Many living organisms have specialized regions of their body that have features that will either promote or inhibit diffusion of materials and/or heat in order to maintain the conditions needed for survival. In the first lecture exam a multiple choice question was included which tested the students' understanding of how alteration of factors influencing diffusion would lead to an overall change in diffusion rate. "According to Fick's Law as it pertains to most solutes in solution, diffusion rates for a solute will decrease if _____ is decreased." a) the diffusion distance b) the difference in concentration between two areas c) the surface area d) both (a) and (b) e) both (b) and (c) The correct answer is "e". Diffusion rates decrease if the distance over diffusion must take place is increased. Therefore, decreasing diffusion distance would increase diffusion rates, meaning answer "a" would be incorrect. Larger differences in concentration amplify the net directional movement of particles during diffusion, so decreasing the difference in concentration would decrease rates of diffusion (per answer "b"). Similarly, the surface area over which diffusion takes place determines how many points in space are available for particles to move from one location to another. Thus decreasing surface area decreases diffusion rates (answer "c"). Since both "b" and "c" are true, the correct answer would be "e" Components I assessed the ability of students to correctly assess how directional changes (increase or decrease) in three factors that influence diffusion rate would directionally alter diffusion rate (increase or decrease). The following performance criteria were used to evaluate the component.

Q5. Briefly describe the student sample (i.e., sample size, typical year in college at time of enrollment) to aid interpretation.

In both of the courses assessed in 2015-16 (MICR-M 310 and PHSL-P 416), the students are juniors or seniors. These classes typically enrolled 10 to 25 students. Students in PHSL-P 416 are almost entirely biology majors, whereas many students in MICR-M 310 are biochemistry majors, biological/physical sciences majors, or even secondary education majors.

Q7. Please report the quantitative findings resulting from your data analysis.

For example, you might report the percentage of students who met an acceptable level of performance, or average student performance on a particular measure, or the percentile rank achieved by a group of students in comparison to a larger pool (such as on a standardized assessment tool).

MICR-M 310: Overall, 13 out of 16 students (81.25%) have answered correctly. Of those, 7 out of 8 (87.5%) of the biology majors answered correctly. This is above our expected benchmark of 70%. Only a few students could not answer the question in a satisfactory manner. I believe that having increase the number of in-class group activities in this class has helped with learning outcomes. PHSL-P 416: Out of 12 students, 10 (83%) correctly answered that both decreasing differences in concentration and decreasing surface area would decrease diffusion rates. Thus the performance benchmark of 70% for this assessment was reached. The two students who answered incorrectly each identified one of the two conditions that would cause a decrease in diffusion rate (one identified only the decreased difference in concentration, the other only the decreased surface area) but not both.

Q8. Please state your interpretation of these findings, and your Action Plan for future improvement of student learning.

Thus the performance benchmark for the 2015-16 assessment was reached. These are goals and outcomes that seem to be very taught in the biology curriculum.

Q28. Are there actions that IU Kokomo can take to support implementation of your Action Plan? Are there institutional challenges that your program faces that will make improvement of student learning on this outcome difficult? If so, you can describe those challenges and needs here.

None

Q19. Please describe how you have shared these findings (for example, with current and prospective students, faculty, specific accrediting bodies, or other relevant parties).

If you have not yet shared your findings, please describe your plan for dissemination.

The report will be online on the assessment webpage.

Q24. If you have other comments about assessment to share with the Committee, please do so here.

Q9. Do you wish for the Director of Assessment, Dr. Julie Saam (jsaam@iuk.edu), to consult with your faculty regarding this result? That is, are you wishing for assistance at this time with your next steps?

- ○ Yes
- ◉ No

Location Data

Location: (40.439804077148, -86.089302062988)

Source: GeoIP Estimation