

Report : Assessment Cycle Details for : Mathematics

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Workspace : Academic Program Assessment and Planning Workspace

Assessment Plan: 2017-2018 Assessment Cycle: Assessment Plan and Assessment Findings

Assessment Plan Template : IU Kokomo Academic Assessment Template

Report Generated : Thursday, May 31, 2018

Measures and Findings

IU Kokomo General Education Outcomes (Copy 1)

Quantitative Literacy

Outcome 4: Students will use fundamental statistical information

Component 1: Students will interpret data using tables and graphs (e.g. frequency tables, histograms).

Component 2: Students will compute and interpret basic descriptive statistics (e.g. mean, weighted mean, median, mode, standard deviation, percentiles).

Component 3: Students will understand basic concepts relating to sampling (populations/samples, random sampling).

Component 4: Students will use basic probability distributions (e.g. normal distribution, binomial distribution)

Component 5: Students will compute and interpret confidence intervals of a population parameter (e.g. proportion or mean)

Mapped to:

- **IU Kokomo General Education Outcomes:** Outcome 4: Students will use fundamental statistical information

Measure

K310 Statistics Final Exam

COURSE LEVEL; DIRECT - EXAM

Details/Description :

Component 1: Students will interpret data using tables and graphs.

Exam question: Create a frequency distribution and a histogram from the given data.

Component 2: Students will interpret basic descriptive statistics.

Exam question: Interpret what it means when a person's weight is in the 85th percentile.

Component 3: Students will qualify basic concepts relating to sampling.

Exam question: Name the sampling technique and state why it is or is not a bad technique.

Component 4: Students will use basic probability distributions.

Exam question: Find the percent scoring below a certain value.

Component 5: Students will compute and interpret confidence intervals.

Exam question: Find the 95% confidence interval of the mean and use everyday English to interpret the result.

Acceptable Target :

75% average for the class

Implementation Plan (timeline) :

Fall 2016-Summer 2017

Key/Responsible Personnel :

Mathematics Lecturer Linda Krause

Supporting Attachments :

Findings

for K310 Statistics Final Exam

Summary of Findings :

112 students, freshmen through seniors, were assessed.

Component 1: 94% success rate

105 students correctly created a frequency distribution and histogram.

Component 2: 76% success rate

85 students correctly described the 85th percentile.

Component 3: 89% success rate

100 students correctly explained a bad sampling technique.

Component 4: 64% success rate

72 students correctly calculated the percent below a certain value.

Component 5: 70% success rate

78 students correctly computed and interpreted confidence intervals.

The overall average of all questions was 78.6% which meets expectations.

Acceptable Target Achievement:

Met

Reflections/Notes :

Confidence intervals are taught at the end of the semester. It was determined that perhaps a supplement to the textbook homework would be helpful to improve understand/memory.

The question about using the basic probability distribution was taught in the middle of the semester. Perhaps we should reassign certain homework problems as a review for the final exam. Students were better able to answer this question on the midterm test. We do the assessment on the final exam to find out what students leave the course knowing.

Substantiating Evidence :***Action***

in 2016 -2017 Academic year Data or 2016 Calendar year data - Action Plan

Use supplemental handouts.

No Status Added to Use supplemental handouts.

Action details:

Supplement the weaker areas with additional homework and leading questions to get students to think about the topics more deeply.

Implementation Plan

(timeline):

Fall 2018

Key/Responsible**Personnel:**

Math department

Measures:

Obtain a 75% success rate for all questions in K310. (upper level students)
Obtain a 66% success rate for all questions in M133. (lower level students)

Supporting Attachments:***Measure******M133 Statistics Exams***

COURSE LEVEL; DIRECT - EXAM**Details/Description :**

Component 2: Students will interpret basic descriptive statistics.

Exam Question: A person's IQ score is in the 53rd percentile, and the z-score for that person = -0.5. What does each of these pieces of information tell you about the person's IQ?

Component 4: Students will use basic probability distributions.

Exam Question: Suppose the volume of soda in Pepsi cans is normally distributed with a mean of 12.00 fl. oz. and a standard deviation of 0.5 fl. oz. A can is chosen at random. Determine the probability that the can contains more than 11.57 fl.oz.

Component 5: Students will compute and interpret confidence intervals of a population parameter.

Exam Question: Find the 95% confidence interval for the population mean from the given information and use everyday English to interpret the result.

Acceptable Target :

66% class average : These are 100 level students.

Implementation Plan (timeline):

Fall 2016 - Summer 2017

Key/Responsible Personnel:

Mathematics Lecturer Linda Krause

Supporting Attachments:***Findings******for M133 Statistics Exams***

Summary of Findings :

81 100 level students were assessed.

Component 2: 23% success rate
19 students correctly interpreted percentile and z-score.

Component 4: 41% overall success rate
33 students correctly found the probability overall.

textbook 1: 20/30 correct 67% success
textbook 2: 13/51 correct 25% success

Component 5: 65% success rate
53 students correctly computed and interpreted confidence intervals.

textbook 1: 10/30 correct 33% success
textbook 2: 43/51 correct 84% success

Acceptable Target Achievement:

Not Met

Reflections/Notes :

The question for component 2 should be split into 2 separate questions. Individually they could answer a question on percentile and a question on z-scores on quizzes, but they could not interpret the two ideas taken together.

The questions for components 4 and 5 each met expectations with one textbook and not another. We tried to find an new text, but with either text one topic was well covered while another was not. We have determined that we need to supplement the course with handouts regardless of the textbook we choose.

Substantiating Evidence:

Mathematics Outcome Set

Outcome

Outcome 1.1 Write Proofs

Students will be able to construct and write proofs for mathematical assertions, using a variety of methods.

Mapped to:

No Mapping

Measure

M303 student proofs

COURSE LEVEL; DIRECT - EXAM

Details/Description :

For every student enrolled in the course each proof problem on the final exam (5 problems in all) was evaluated using an EMRN proof grading rubric. Each problem's solution was determined to be E (exemplary), M (meets expectations), R(revisions needed) or N (not assessable)

Acceptable Target :

A students proof writing was judged to be acceptable if more than half of his/her final exam proofs are at the E or M level.

Implementation Plan (timeline):

Key/Responsible Personnel:

Supporting Attachments:

Findings

for M303 student proofs

Summary of Findings :

In M303 50% of students (2 students) were judged to be writing proofs with an acceptable level of proficiency, and 50% of students (2 students) were on the borderline between acceptable and unacceptable.

Acceptable Target Achievement:

Reflections/Notes :

Substantiating Evidence:

Action

in 2016 -2017 Academic year Data or 2016 Calendar year data - Action Plan

Offer an introduction to proofs course every fall semester

No Status Added to Offer an introduction to proofs course every fall semester

Action details:

We continue to believe that the students would benefit from having a 300-level introduction to proofs course, with MATH-M216 as a prerequisite, offered every fall semester. This could be either a new course or a re-focused M347 that would concentrate even more on proof reading and writing. The challenge here is the low enrollment in the math courses beyond calculus which has thus far limited our course offerings.

Implementation Plan (timeline):

Key/Responsible

Personnel:

Measures:

Supporting Attachments:

Measure

M360 student proofs

COURSE LEVEL; DIRECT - STUDENT ARTIFACT

Details/Description :

For every student enrolled in the course a selection of proof problems taken from the final exam and midterm tests (6 problems in all) was evaluated using an EMRN proof grading rubric. Each problem's solution was determined to be E (exemplary), M (meets expectations), R(revisions needed) or N (not assessable).

Acceptable Target :

A students proof writing was judged to be acceptable if at least two-thirds of his/her assessed proofs are at the E or M level.
At least 75% of students should be judged as writing proofs at an acceptable level.

Implementation Plan (timeline):

Key/Responsible Personnel:

Supporting Attachments:

Findings

for M360 student proofs

Summary of Findings :

In M360 100% of students (4 students) were judged to be writing proofs with an acceptable level of proficiency.

Acceptable Target Achievement:

Exceeded

Reflections/Notes :

Substantiating Evidence:

Measure

M366 student proofs

COURSE LEVEL; DIRECT - STUDENT ARTIFACT

Details/Description :

For every student enrolled in the course a selection of proof problems taken from the final exam and midterm tests (6 problems in all) was evaluated using an EMRN proof grading rubric. Each problem's solution was determined to be E (exemplary), M (meets expectations), R(revisions needed) or N (not assessable)

Acceptable Target :

A students proof writing was judged to be acceptable if at least two-thirds of his/her assessed proofs are at the E or M level.
At least 75% of students should be judged as writing proofs at an acceptable level.

Implementation Plan (timeline):

Key/Responsible Personnel:

Supporting Attachments:

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Findings

for M366 student proofs

Summary of Findings :

In M366 100% of students (4 students) were judged to be writing proofs with an acceptable level of proficiency.

Acceptable Target Achievement:

Exceeded

Reflections/Notes :

Substantiating Evidence: