



Making Meaning Out of the Mounds of Data: Working Through Steps 5, 6, and 7

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Goals for the Workshop

- A quick review of some analysis basics
- A review of what is expected in Steps 5, 6, and 7 of the Program Assessment Report form (and a little bit about Step 4)
- A collaborative discussion of analysis and improvement scenarios

Two Types of Analysis Issues

- What research issue or question of interest are you trying to answer or address? Or, what aspect of your program is your assessment focusing on in order to show program quality?
- How do you make sense of or interpret the data pulled from the assessment? Or, what does the data tell you that can be used to improve student learning and student evaluation?

Some Typical Research Questions

Pieper, Fulcher, Sundre, and Erwin identify 4 types of research questions in their article: “What Do I Do with the Data Now?: Analyzing Assessment Information for Accountability and Improvement.”

3 Question-Types Seem Relevant for VU Faculty:

- Competency
- Change
- Difference

Questions of Competency

- Strategy is to show that students are meeting our cognitive or affective success standards
- Question being asked: “Are our students meeting our expectations?”
- Quality of the program is reflected in the results that show strengths—students, faculty, parents, employers, and politicians want to know that students are meeting *significant* learning goals

What Are *Significant* Standards?

Goal is objective assessments grounded in

- Accepted or peer-reviewed discipline standards
- Faculty expertise and experience
- Employer expectations
- Advisory committee recommendations
- Nationally recognized certifications or standards

Should be reflected in Step 2—Significance of Assessment

Examples of Competency

- Any assessment tools such as exams or rubrics that reflect significant course outcomes
- Assessment that uses the AAC&U VALUE rubrics, such as Critical Thinking or Writing
- Aviation Flight Dept. uses 3 FAA practice exams to check students' knowledge of course content and to sign off on final flight exam
- Graphic Design Dept. gathers a group of employers who use an analytic rubric to evaluate student design projects

Questions of Change

- Strategy is to show “value-added” longitudinally
- Question being asked: “Do students show greater abilities or positive change over time?”
- Quality of the program or course of study is reflected in the cognitive or affective growth of students from the beginning (or pretest) to a later (or posttest) stage.

Examples of Change

- Faculty use a pre/posttest course activity
- Social Work Dept. uses a mapped series of ethics questions demanding greater cognitive ability as students progress through courses
- Biology Dept. uses a lab assignment to check the improved quality of lab reports from 100 to 200-level courses
- Student critical thinking abilities are measured from first to last gen. ed. or capstone course

Questions of Difference

Strategy is to show that students who complete a course/program/activity are more successful than students who don't complete

Question being asked: "Do students who take this course/program/activity learn more than students who don't?"

Quality of program is reflected in assessment that shows students do better after working through a set of outcomes

Examples of Difference

- English Dept. might want to show that students who earn a “C” or better in ENGL 102 do better in their writing intensive course
- Accounting Dept. might want evidence that students who complete ACCT 201 with a “B” or better are more likely to be retained and graduate with an Accounting degree
- Biology Dept. might want to show that students who earn a “B” or better in BIOL 111 and 112 are more successful

Analysis and Improvement Basics

Three Fundamental Questions of Analysis:

1. Does the data represent an acceptable level of achievement/activity/accomplishment given our mission, outcomes, values?
2. Does the data represent an identifiable trend in the level of achievement or activity or accomplishment?
3. Are the differences in the subpopulations acceptable?

Linda Hatfield, HLC Workshop

Analysis and Improvement Basics

- Focus on both student learning successes and learning improvement needs
- Analyze data in ways that show program quality and student progress (retention) using specific standards rather than holistic scores.
- Disaggregate data into skill types, cognitive levels, content areas, subgroups of students, etc., in order pull greater meaning out of data
- Benchmark data against national data or other institutions, whenever possible

Moving From Step 4 to 5

Step 4—Raw Data, without the research context and no explanation of student abilities or quality of the tools (rubrics, exam questions, lab situation, etc.). For instance:

- Number of students scoring in rubric dimensions
- Number of students answering a question correctly
- Summary of student survey or reflection responses

Step 5—The Basics

- Separating raw data into “Strengths” and “Weaknesses,” *without* analysis for Projects A and B—for instance, how many students were at or above success levels for each dimension of a rubric
- Disaggregate by groups or demographics, especially if part of the research or question being asked—how many students achieved standard for both pre/posttest (Change), or how many students who didn’t take preliminary course hit standard (Difference)

Step 5—The Basics

- Trends—give strength and weakness *comparative data* from previous year(s) of the assessment—*applicable only in 2nd/3rd year*
- Analysis—Explain the strengths, weaknesses, trends for both Projects A and B: (1) summarize in terms of the research question being asked, (2) give causal explanation for results (reflections/surveys can help with this), and (3) set-up the improvements to be identified in Steps 6 & 7

Step 6—The Basics

- Describe the impact on learning and results of the previous year's improvement plan—how did the changes, the extra lab or homework or the student practice using the rubric, impact success and what you know about student learning?
 - (1) Summarize the changes you made
 - (2) Describe the impact and evidence you have of the change (reflection might with this)

Step 6—The Basics, Continued

- Describe New *Curriculum* Improvement Plan—the real purpose of assessment
- Plan improvements in specific, measurable details; think of specific activities that will produce clear results, such as adding a practice test; study sessions and tracking who attends vs. those who don't; new, graded homework and comparing test and homework results; new group activities, such as teams applying a rubric to sample papers

Step 7—The Basics

- Describe assessment tools improvement plans
- Describe for all 4 projects, if changes are applicable
- Make changes that will improve your ability to show the quality of the program and learning, such as improving test questions for better results discrimination, mapping test questions, improving a rubric, or devising a new reflection or changing some reflection questions

Scenario 1

Program A identifies questions on the final exam addressing certain key skills as the second of its projects. The success standard is 80% of the students would earn 70% or better on the identified question set. The actual results turn out to be 94% earned 78% or better.

What do you know, as an outsider, about the success of the students and program, based on this information?

Scenario 1, Analysis

- What if the class started with 24 students, but only 14 students took the final exam?
- What if 8 of the students who dropped or were withdrawn were female?
- What if all the students who dropped or were withdrawn had been required to take developmental reading?

Scenario 1, Additional Thoughts

- What does the additional detail tell you about the success of the students and the program?
- What additional information would you want to understand the student successes and those who didn't make it to the final?
- What curricular improvements would you suggest in this case?
- What assessment standards or tools evaluations or tools improvements might you recommend?

Analysis and Improvement Basics

Recognize the data doesn't answer everything:

- Data given in holistic terms is much less valuable than specific, disaggregated data
- Data collected this year will reflect a limited group in a limited place and time, not a trend
- Data without a benchmark or baseline is preliminary and offers limited basis for judgment
- Data gives *evidence*, not a definitive claim about learning; trends strengthen claims

Scenario 2

Program B gives students a diagnostic lab assessment in the second semester; the skills are essential for program success. The success or “competency” standard is set at 100% of the students will earn a 75% or better. The average results for 3 consecutive years were 76%, 81%, and 75%

What do you know, as an outsider, about the success of the students and program, based on this information?

Scenario 2, Analysis

- What if, in order to meet the “competency” standard, students repeated the task until they earned the 75% or better score?
- What if 28% of the students needed 3 or more attempts to pass?
- What if students had to take a national certification exam requiring a 70% or higher to pass, and the program’s students averaged a 71% on this exam, while the national average of all students taking the exam was an 82%?

Scenario 2, Additional Thoughts

- What does the additional data tell you about the success or “competency” of the students and the program?
- What are the limitations of the 3 years of data?
- What curricular improvements would you suggest in this case?
- What assessment success (competency) standards or tools improvements might you recommend?

Scenario 3

The Economics Dept. decides to investigate the impact of students taking both ECON 201 and 202 on their success in the Accounting program. Their hope is to show that Accounting students taking both courses are more likely to complete their Accounting degree. What would they have to do to set up a meaningful and compelling study to determine the impact or “difference” taking these courses might make?

Scenario 3, Analysis

- Why might the Economics faculty want to take on this sort of study?
- Why might the Accounting faculty be interested in this study?
- What if the Economics faculty discovered that taking ECON 202 alone made little difference in students' success in Accounting, but that Accounting students who passed ECON 201 with a "B" or better were 48% more likely to earn at least a "C" in ACCT 201?

Scenario 3, Additional Thoughts

- What practical solutions might you suggest to help the department achieve its goal of completing a 3-year study of “difference”?
- What other factors might need to be considered before the Econ. Dept. could make a correlation between success in ECON 201 and ACCT 201?

Scenario 4

Graduates of Program C are very employable.

Large numbers of students are accepted in the program each year, although only about 45% of applicants make it through a foundational, gateway course. The program and course require students to have calculation skills, which seem to be a problem for many students. The program uses a pre/posttest approach, and it appears that students who begin with limited calculation skills never improve on the posttest; successful students score well on both exams.

Scenario 4, Analysis and Additional Thoughts

- What are the “data indicating strengths”?
- How should the exam results be reviewed to find strengths and weaknesses and to help identify curriculum improvements in Step 6?
- What assessment tools additions or changes might you recommend?
- What if a program survey found that 80% of the students failing the gateway course studied two hours or fewer per week?

Scenario 5

Program D has a complementary set of projects, a set of 3 application questions on a final exam and a reflection at the end of the test on those questions. The faculty in the program have seen problems with students' ability to apply their knowledge. The faculty are hoping that 70% of the students will answer all three questions correctly. Only about 58% answer all three questions correctly, and the reflection reveals the students find the questions difficult, but offer no clear reason.

Scenario 5, Analysis

- How might the program assess the responses to identify specific student strengths and weaknesses?
- What if the students, generally speaking, do well on one of the questions, but fairly consistently have difficulty with the other two?
- What might a study of the unit exam covering this material reveal? What questions should be asked about the unit instruction and exam?

Scenario 5, Additional Thoughts

- What questions does the additional info. raise about the students?
- What curricular improvements would you suggest in this case?
- What assessment standards or tools evaluations or tools improvements might you recommend?

Giving the Presenter Data

- What is the one most important thing that you learned from this workshop?
- What would you like more information on, whether something from this workshop or something not covered today?
- Which of the two following workshop topics would you be interested in? (A) Rubric building and use, (B) Test question analysis