

# National Institute for Learning Outcomes Assessment

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## A Simple Model for Learning Improvement: Weigh Pig, Feed Pig, Weigh Pig

Keston H. Fulcher, Megan R. Good, Chris M. Coleman, and Kristen L. Smith

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## Abstract

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Assessing learning does not by itself result in increased student accomplishment, much like a pig never fattened up because it was weighed. Indeed, recent research shows that while institutions are more regularly engaging in assessment, they have little to show in the way of stronger student performance. This paper clarifies how assessment results are related to improved learning – assess, effectively intervene, re-assess – and contrasts this process with mere changes in assessment methodology and changes to pedagogy and curriculum. It also explores why demonstrating improvement has proven difficult for higher education. We propose a solution whereby faculty, upper administration, pedagogy/curriculum experts, and assessment specialists collaborate to enhance student learning.



For this article, we define assessment as everything typically encompassed in the process – defining learning outcomes, mapping them to the curriculum, selecting an instrument, collecting data, analyzing results, reporting results, and communicating with stakeholders *with the exception* of using results for improvement. The purpose of doing so is to separate the assessment mechanics from use of results for improvement (i.e., faculty- or student-driven changes to programming/curricula that are re-assessed and then deemed improvements).

*PLAIR is the Program  
Learning Assessment,  
Intervention, and  
Re-assessment Model.*

## Learning Improvement: The Simple Model

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In a nutshell, the simplest model for *evidencing* improvement is: assess, intervene, re-assess. Or: weigh pig, feed pig, weigh pig; henceforth referred to as Program Learning Assessment, Intervention, and Re-assessment (PLAIR). Improved learning is demonstrated when a re-assessment suggests greater learning proficiency than did the initial assessment.

Although the model sounds simple, evidence of using results in this way is surprisingly rare. Banta, Jones, and Black (2009) reviewed almost 150 profiles of good assessments in higher education. They found that only 6% could demonstrate improved learning. Even more sobering, one would assume that this modest percentage would be far lower in a random sample of academic programs. Regarding the Wabash study, where universities were provided with ample assessment resources, Kuh (2011) observed that few schools showed how they intentionally changed their policy or practice based on assessment information. He further stated, “Rarer still were colleges or universities where changes in policies or practices made a positive difference in student attainment” (p. 4). In this context, Kuh’s use of “attainment” refers to improved student learning outcomes as captured by the Collegiate Learning Assessment.

## Why Learning Improvement is Rare

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Our institution, James Madison University, has a rich history of high quality student learning outcomes assessment. We have some examples of evidenced learning improvement, but far fewer than we would like. We have read assessment reports or heard stories that encompass almost all combinations of assess, intervene, and re-assess where one or more of the critical three components is missing. We illustrate such basic breakdowns of PLAIR through hypothetical examples where programs attempt to improve students’ writing. We follow these examples with more nuanced ways in which the model can fail. While the examples are based on a skill – writing - the PLAIR is equally applicable to other kinds of outcomes such as knowledge or dispositions, and could be implemented in academic programs or student affairs units.

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<sup>1</sup> As a technical aside, this simple model can be operationalized as a pseudo-longitudinal design where, for example, seniors are assessed and then, after the program has made substantial changes, a later cohort of seniors is assessed. In this case, a Cohen’s *d* would suggest the difference in proficiency between the two cohorts. If the latter cohort performs better than the former, then the model was executed successfully. The model could also be implemented as a comparison of growth (i.e., pre-post results) between two different cohorts with one receiving the new intervention. In this case, two effect sizes (Cohen’s *d*) are computed: one for the growth of each cohort. If the effect size for the second group is larger than the first then the model has been successfully implemented.

## Basic Breakdowns in the Model

*Assess, intervene, re-assess.* Program A's faculty are not satisfied with students' writing proficiency. To address this issue, the faculty met numerous times. From these meetings, several initiatives were launched. A course in writing was added. Students wrote more papers in existing classes too. After students went through this new curriculum, the program implemented a program-level writing assessment rubric. They found that students on average met their expectations around writing.

This story sounds like a good one. The problem is that Program A would have difficulty demonstrating that this new curriculum was more effective at fostering student learning in relation to writing than the previous one because no pre-assessment was implemented. Back to the pig example: the pig was fed and then weighed. It is unknown how much weight the pig actually gained, if any.

*Assess, intervene, re-assess.* Program B's faculty were dissatisfied with students' writing. Year after year they implemented a robust writing assessment. And, every year, the results suggested the same problem: students were graduating with sub-standard writing skills. Nevertheless, no systematic change in curriculum or pedagogy was made. Some faculty tweaked their individual sections but did not coordinate with other faculty.

In this scenario, despite good methodology, learning improvement was not evidenced because no coordinated intervention was implemented. The pig was weighed and then weighed again. However, no weight gain was evidenced because the pig was not fed.

*Assess, intervene, re-assess.* Program C assessed their students' writing and were not pleased. In response they required additional papers through their curriculum. Also, the department head paid for several in-service workshops where faculty learned from writing experts how to provide better feedback to students. Unfortunately, before the first affected student cohort received the full intervention, the assessment coordinator took a job at a different university. Unfortunately, the program did not assess subsequent cohorts.

Given that no follow-up assessment was conducted after the intervention was implemented, the efficacy of the new curriculum and better trained faculty was unknown. The pig was weighed and then fed. Unfortunately, the pig was not weighed after the feeding, thus obfuscating legitimate claims about weight gain.

Although none of these programs successfully implemented the PLAIR, some benefits accrued nonetheless. For Programs A and C, it is quite possible that students wrote better because of the programmatic changes. Indeed, the faculty could relay anecdotes of student success. Unfortunately, they could not demonstrate persuasively this improvement to an external audience. For Program B, some individual sections may have improved, which is good for individual faculty and some students, but at the program level the needle did not move. The point is that, to evidence writing improvement at the program level, the pedagogical or curricular intervention must be implemented consistently in all pertinent sections and the assessment must be administered before and after.

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## Nuanced Breakdowns in the Model

In addition to the aforementioned basic process breakdowns, more nuanced problems can undermine the model. In the methodology context, sampling may be unrepresentative, instruments unproven, students unmotivated, incorrect analyses performed, etc. In other words, the data may not accurately reflect the targeted student learning.

From the intervention perspective, problems arise as well. Two notable ones include lack of alignment and lack of successful implementation. For some programs, there is little alignment or mapping between curricular/co-curricular activities and outcomes. Basically, students engage in activities but there is no clear plan about how these activities relate to program-level outcomes.

Even if the program has clear student learning outcomes and a logical curriculum to engender them, students still may not improve on those program-level outcomes for any number of reasons. Perhaps the program-level curriculum map – while looking good on paper – has little in common with what is actually taught by faculty across several sections; perhaps the

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during their graduate programs. In fact, it seems that conversations about teaching are taboo compared to frequent conversations about scholarship. Even if a faculty member adopts an evidence-based pedagogy, that lone faculty member will not bring about *programmatic changes*. Programs are made up of teams of faculty, and everyone must be on board (a challenge within itself) to generate meaningful changes.

In sum, a program must overcome many obstacles to evidence learning improvement. A program that overlooks any *part of intervene, re-assess* will de facto be unable to evidence improvement. Even if the PLAIR model is adopted, there is no guarantee that the program will be able to tell a story about learning improvement. Breakdowns in assessment methodology and/or intervention can thwart the best intentions. With those obstacles in mind, the next section opens with a realization that drew our attention to program learning improvement. It then provides our current thoughts regarding how a university could truly close the loop and demonstrate improved learning at the program level.

## Structuring a University for Learning Improvement: Our “Aha” Moment

We had an epiphany recently at our institution. When programs needed help with assessment, the Center for Assessment and Research Studies provided state-of-the-art consultation. Challenged and strongly supported by the administration, faculty put forth great effort with assessment mechanics. They worked together to articulate program learning outcomes; curriculum maps identified where students theoretically learned these skills; instruments were specially developed to map to the program outcomes; data were collected at the program level; clear reports were written. In other words, the assessment “gears” were in place and effectively spinning at the program level. Missing in the assessment consultation, however, was guidance on how a program could use results to improve student learning. Our assessment consultants had little training in this area, and thus faculty received little support. Perhaps not surprisingly, the “use of results” section in assessment reports most typically featured changes to assessment mechanics and an occasional programmatic change. Rarely did we see improvement to student learning ala the PLAIR model.

On the other side of campus – literally and figuratively – the faculty development office was helping individual faculty develop better classes and providing support for best practices in pedagogy, course design, and alignment at the course-section level. Unfortunately, up to that point, the assessment office and the faculty development office coordinated in only nominal ways. Further, the assessment office provided methodological assistance at the program level, whereas the faculty development office provided help at the individual section level. In other words, there were two problems: the offices were not collaborating, and they were helping faculty at different levels (program vs. section). When these two offices began to talk, however, a synergistic solution seemed obvious. Properly coordinated, with support from administration, these units could help faculty create a system whereby effective interventions could be implemented and *assessed at the program level*.

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Scale or Subscale	Corresponding Objective(s)	2011 Results Mean	2012 Results Mean	*2013 Results Mean (sd)	Desired Results 2013	**2013 Different from 2012?
Oral Communication Rubric (n=25): 1 = unsatisfactory, 2 = emerging, 3 = competent, 4 = highly competent						
Delivery Skills	4	2.8	2.5	2.6(.42)	3	No
Introduction	4	2.7	2.9	2.8(.55)	3	No
Body	4	3.1	2.9	3.0(.38)	3	No
Conclusion	4	2.9	2.7	2.7(.49)	3	No
Graduation Survey (n = 91): 1 = no gain, 2 = small gain, 3 = moderate gain, 4 = large gain, 5 = tremendous gain						
Oral Comm	4	2.7	2.6	2.6(.8)	3	No

Table 1. Oral Communication Senior Assessment Results of three Cohorts.

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According to the curriculum map, four courses address oral communication: three with moderate coverage, and one with major coverage. On paper, it would seem students have ample opportunity to learn these skills.

Nevertheless, the assessment evidence clearly indicates that students are not as proficient as the program faculty expect. To dig deeper, the six faculty members teaching these courses met with the program coordinator three times in the month of March to investigate, as a program, why students were falling short. What follows is a summary of these discussions:

- Indeed, students did present orally in all of the aforementioned courses
- However, how these oral communication experiences were implemented

work hard. Students will watch videos of the three best senior capstone presentations from the previous year. Faculty will then describe to their students how each of these presentations would be evaluated on the oral communication rubric.

(2) Intervention 2: *Align Class-Level Assessments, Using Program-Level Oral Communication Rubric*. Presentations will be evaluated on content (70% of the task grade) but also specifically on oral communication (30%). Each faculty member will use the oral communication rubric for that 30% of the grade.

(3) Intervention 3: *Emphasize Practice*. In all classes with an oral communication component, faculty will urge students to practice their presentations at least four times before the in-class performance. Students will be encouraged to work with their classmates to receive feedback using the rubric and to tape and review their practice efforts.

(4) Intervention 4: *Increase the Rigor of Capstone Presentations*. For the capstone, the ante will be raised. The oral presentation will be open to all program faculty and to all majors; it will also be recorded. The three capstone professors will emphasize to students that this presentation will demonstrate not only what students have learned in the program, but also how well prepared they are for jobs or graduate school.

Special Note: While not an intervention that directly impacts students, faculty will spend three days of in-service training prior to the first week of classes in Fall 2014. There they will discuss how to encourage students to practice before presentations and how to use the oral communication rubric consistently across courses. The faculty development office will help facilitate this training module.

4. Lay Out Improvement Timetable To coordinate the interventions with assessment, we created an improvement timetable (see Table 3). Because the interventions affect several courses that span students' junior and senior years, the total effect will not be realized for several years. We will collect data each year, which corresponds to differing levels of intervention. In Year 0 we collect data on seniors (Class of 14') who have not experienced any new intervention. In Year 1, we collect data on students (Class of 15') who will receive partial intervention: only senior-level courses are enhanced for this group (PCUL 402 and 480). In Year 3, we collect assessment data



publish an article about their important work leading to improved student outcomes. They receive travel stipends to present in their own discipline. Upper administration communicates such stories to the Board of Visitors and the state and federal governments. Further, everyone celebrates what is most important: students learned more. They are better positioned for post-college endeavors such as graduate school and the job market.

## Conclusion

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Higher education has an obligation to continuously improve, especially regarding student learning. Unfortunately, evidence of learning improvement



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## NILOA National Advisory Panel

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Joseph Alutto  
*Provost*

## About NILOA

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- The National Institute for Learning Outcomes Assessment (NILOA) was established in December 2008.
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