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Assessing Breadth of Learning in Psychology 101

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Drs. O'Dell and Killibarda asked the Psychology Department to explore learning in Psychology 101, Introductory Psychology 1, with a focus on how the learning in this courses met the general education goals described for Social Science courses at Indiana University Northwest (IUN). For a number of years, the Psychology department has assessed learning of our majors through the use of a graduation exit exam covering the broad Domains of Psychological knowledge as identified by the American Psychological Association (APA). The APA indicated that undergraduates should receive training in the following knowledge areas (Psychology 101 focuses on the first eight areas):

- 1) History of Psychology
- 2) Cognitive Processes

- 3) Research Methods
- 4) Biological Bases of Behavior
- 5) Sensation and Perception
- 6) States of Consciousness
- 7) Learning
- 8) Motivation
- 9) Developmental Psychology
- 10) Personality
- 11) Testing and Individual Differences
- 12) Abnormal Psychology
- 13) Social Psychology

The IUN requirements identified three major areas of learning (Breadth of Learning) in Social Sciences:

- 1) Explain the Methods of Inquiry Used by Social or Behavioral Scientists
- 2) Explain Behavior Using Social or Behavioral Science Theories and Concepts
- 3) Explain the Factors that Influence how Different Societies Organize Themselves or How Individual Differences Influence Various Spheres of Human Activity

A departmental review of the items used to assess knowledge of Psychology majors at the time of graduation (i.e., upon completion of the capstone course) suggested that many of items

used in the graduation exam also reflected content covered by the Breadth of Learning goals.

For example, an item from Psychology Area 3 also clearly covers Breadth of Learning point 1:

**The double-blind technique is used by researchers to eliminate:**

- a. experimenter bias**
- b. operational effects**
- c. subject stress**
- d. hypothesis failure**

Items in other Psychology Areas clearly reflected Breadth of Learning 2 and 3. For example, an item from Psychology Area 4 (Biological Bases of Behavior also measures Breadth Point 2 (Explain Behavior Using Social or Behavioral Science Theories and Concepts):

**You are swimming in shark-infested waters when you suddenly feel a violent “tearing” sensation in one of your legs. You begin to panic, your heart races, you feel dizzy and you have butterflies in your stomach.” What part of the nervous system has been activated?**

- a. sympathetic**
- b. somatic**
- c. afferent**
- d. parasympathetic**

An item from Psychology Domain 8 (Learning) can also tap into Breadth of Learning 3 (Explain the Factors that Influence how Different Societies Organize Themselves or How Individual Differences Influence Various Spheres of Human Activity):

**Long after being bitten by a stray dog, Alonzo found that his fear of dogs seemed to have disappeared. To his surprise, however, when he was recently confronted by a stray dog, he experienced a sudden twinge of anxiety. This sudden anxiety best illustrates**

- a. delayed reinforcement.**
- b. latent learning.**
- c. spontaneous recovery.**
- d. shaping.**

The Department of Psychology has historically conducted self-assessment of student learning through completion of an exit exam with item assessing each of the Psychological Knowledge Domains mentioned above. Since the Psychology Department had already started to review and revise this instrument, the department revised it with an eye toward building in assessment of Breadth of Learning in Introductory Psychology.

### **Method**

#### **Participants**

Undergraduate students (N = 233) enrolled in Psychology 101 provided data for this departmental assessment.

#### **Procedure**

Students enrolled in Psychology 101 during the Fall 2011 semester completed one set of 24 items twice during the semester. Tenure and tenure-track faculty members in the department reviewed all of the items during the late summer and early fall in order to confirm the quality and acceptability to all members of the department. This created a set of approximately 100 items that the department would use to assess Psychology knowledge for majors. From this, one of the

current researchers (KN) selected 24 items seen as assessing the Breadth of Learning areas identified above. KN did not teach any of the Psychology 101 sections used in this research. Professors for the various Psychology 101 sections did not receive a copy of the items before the first administration and did not retain a copy between administrations. The first administration of test items occurred in mid-October and the second administration occurred during finals week.

## Results

### Does Performance Differ Across Sections/Instructions?

In order to determine whether the department could effectively combine data across professors, the first analysis examined whether professors ( $N = 3$ ) students differed in their scores. The results indicated that the professors did not demonstrate any differences across course,  $F(2, 265) = 0.99, p > .05$ . Thus all subsequent data analysis collapsed the data across courses and analyzed all data in aggregate.

### Did Scores Change from First Administration to Second Administration?

A series of repeated measures t-tests examined whether students' scores changed over the course of the semester. As seen in Table 1, the largest change came from Breadth 3.

Area	N of Items	Score T1	T1 Percentage	Score T2	T2 Percentage	<i>t</i> -value
Breadth 1	3	1.64	54.67	1.54	51.3333333	-1.37
Breadth 2	15	7.70	51.33	7.78	51.8666667	0.48
Breadth 3	6	3.37	56.17	3.61	60.1666667	2.36*

Note: N = number of items in a given Breadth domain, T1 = Time 1, T2 = Time 2, *t* = t-test, \* =  $p < .05$ .

## Discussion

### Current Status of Evidence for Learning

This report examined whether students learned over the course of a semester in Psychology 101 course by examining items related to three Breadth of Learning Areas: Methods of Inquiry, Explaining Behavior, and Societal Organization/Individual Differences. Initial evidence supported learning by students only in the third area of assessment.

### **Why Do We See Learning in Only One Area? The Question of Timing**

Unfortunately, the current study may have failed to find evidence for learning in the first two areas based on when the data gathering occurred. As indicated above, the T1 data collection did not occur until Mid-October. A review of syllabi in the various Psychology 101 courses indicated that all instructors covered Methods of Inquiry first in these courses. Thus, it seems unlikely that students could demonstrate improvement on learned material between T1 and T2 since professors had already finished the section of the course focused on this breadth of Learning area. The majority of Explaining Behavior items fell in the middle of the semester. Thus, instructors had already reviewed much of the material assessed by these items. The majority of the items related to Societal Organization/Individual Differences came from materials covered during the last third of the semester, although instructors had already covered some of this material at T1 data collection. This pattern suggests that one possible explanation for the results observed above was that students had already learned much or all of the material covered in the first two Breadth domains. In order to test this hypothesis, data gathered during the current semester (Spring 2012) occurred on the first day of courses and will occur, once again, on the day of the final exam.

### **Guidance to Interpreting Exit Knowledge Exam Performance**

An interesting question, discussed in the department and with undergraduate research assistants, addressed the issue of what type of performance the department could reasonably

expect in introductory sections. Past research with exit exams at the time of graduation, covering multiple disciplines reported some interesting guidance. Seniors, at the end of their various majors, often scored in the neighborhood of 60% correct on this type of exams (e.g., Banta & Schneider, 1986; Tobin & Gebo, 2008). Freshman, not surprisingly, reported lower scores often falling in the neighborhood of 44% toward the beginning of their major coursework (Tobin & Gebo, 2008). Clearly, all of the percentages reported in Table 1 fell above the suggested floor and below the suggested ceiling for performance. This proved reassuring since, overall, it suggested both that learning had occurred and that students still had room for improvement.

The relatively high score on Breadth 3 proved surprising since the department expected relatively lower scores (lower than the suggested ceiling) from Freshman just finishing their first course. Future research should explore how individual's scores change over the course of undergraduate academic careers to determine if the Exit Exam has enough breadth of difficulty to assess learning at both the Freshman and graduating Senior level.

### **Other Potential Weaknesses in the Current Data Collection Approach**

A number of past researchers have pointed out problems with gathering Exit Exam data. Previously acknowledge problems have included students not showing up to take the knowledge exam (Tobin & Gebo, 2008), as well as a lack of student motivation to answer questions related to knowledge when the tests had no impact on course grading or graduation (Banta & Schneider, 1986). For the current semester, the department has started working with Spring Psychology 101 instructors to include the T2 administration as part of the final exam. This will necessitate additional departmental discussion as this could move the department toward a sing department-wide comprehensive exam for introductory-level Psychology courses.

### **Plans for Future Research and Assessment**

Currently, the department plans to continue gathering data to gain a better understanding of areas of instructional strengths and weaknesses. During the Spring 2012 semester, and in future semesters, the Psychology department plans to gather T1 data from all Introductory Psychology Courses (101 and 102) on the first day of instruction and T2 data on the last day of instruction. It is hoped that the department will agree to work together on a single, comprehensive final exam.

A significant challenge in the assessment process came from overcoming feelings that the department might use assessment data against one or more individual instructors (Halpern, 2004, has reported similar concerns in other educational institutions). With the lack of evidence of overall outcomes between instructors, I (KN) believe that we have overcome this problem.

### **Where Do We Stand Now?**

The Psychology Department has initial evidence for learning in one of the three Breadth of Learning areas assesses. Research is ongoing in an attempt to test for significant knowledge gains in the other two areas. Data from Breadth of Learning 1 and 2, gathering during the Spring 2011 semester, suggested knowledge higher than expected by chance and falling within the range suggested by previous researchers even though this data came in too late to effectively provide feedback in these area.



### References

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