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Student Confidence Ratings and Learning Outcomes

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Introduction and Objectives

- Does instruction make a difference?
  - Confidence Ratings
  - Test Results
  - Student Perceptions

What strengths, improvements, and insights are gained?
- From Confidence Ratings
- From Test Results
- From Student Perceptions

Course Topic List

- **Topic 1** – Soils, Investigation, Testing, Classification
  - 26 Objectives and Tasks
- **Topic 2** – Engineering Properties Of Soils
  - 21 Objectives and Tasks
- **Topic 3** – Modification Techniques
  - 18 Objectives and Tasks
- **Topic 4** – Excavation Equipment
  - 9 Objectives and Tasks
- **Topic 5** – Construction Dewatering
  - 14 Objectives and Tasks
- **Topic 6** – Slope Stability & Support
  - 7 Objectives and Tasks
- **Topic 7** – Layout & Grade Staking
  - 3 Objectives and Tasks
- **Topic 8** – Sediment And Erosion Control
  - 7 Objectives and Tasks
- **Topic 9** – Foundations
  - 8 Objectives and Tasks

Procedures

- Students received a confidence survey for all tasks to be learned before instruction (see sample task cluster).
- Students received instruction on one task cluster (all tasks in the cluster).
- After instruction, students updated their confidence ratings for the learned task cluster.
- Students were tested on their knowledge.
- Pre-instruction confidence ratings were compared to post-instruction confidence ratings.
- Confidence ratings were compared to test scores.
- Perceptual data was collected and examined for improvements needed, strengths, and insights in course or instruction.

Sample Task Cluster

<table>
<thead>
<tr>
<th>Task Cluster</th>
<th>Confidence Value</th>
<th>Pre Count</th>
<th>Post Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Task</td>
<td>100</td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

Sample Test Results

- Test results for unannounced quizzes numbers one and two.
- Grades of zero were earned by students who skipped the two quizzes.

Study Conclusions and New Ideas

**Strengths**
- The objectives and tasks stated in confidence surveys partially satisfy goals of academic administrators and accreditation entities.
- Students see immediately what is expected of them in the course.
- Self-ratings support reflection of skills and knowledge.
- Students can use the confidence surveys as a study guide for exams.
- Instructors have a definitive road map of course material.

**Improvements**
- "Low confidence" as well as "low scoring tasks" signal where to make revisions to improve the course material or the instructional process.
- Low correlation of confidence ratings with test results, or vice versa, signal a need to examine the statement of the task and the instruction to determine what may require revision.
- Adding a pre-test will permit fuller examination of how confidence correlates with learning (baseline vs. post-instruction).

**Insights**
- A pre-test provides a baseline of initial knowledge against which to measure post-test scores to reflect learning after instruction.
- These measures promote coherent learning and instruction: inform the audience (in this case students) what will occur (the content of the confidence surveys), make it occur (teach), determine results (administer the tests and surveys), and improve instruction (make revisions based on data).
- Students tended to report high value in experiencing the pre- and post-survey of their self-confidence in performing expected tasks in the course.