Competency III: Focus on assessment and evaluation strategies

Donna D. Ignatavicius, MS, RN, CNE, ANEF
President, DI Associates, Inc.
donna@diassociates.com
505-301-6486

Developing and Implementing Program Policies

• Consider national, state, and local best practices!
• Be fair and consistent in enforcing policies!
• Involve faculty and ensure agreement.

Developing and Implementing Program Policies

• Admission policies: GPA, testing, pre-requisites, background check, health records, immunizations, CPR certification
• Progression policies: Course repeat policy, readmission policy, student transfers, passing grade
• Graduation policies: GPA, credit requirements (nursing plus core)
Student Learning Outcomes = Expectations of students during the learning process (KSA expectations):
- New Graduate SLOs (aka PLOs/POs)
- Course SLOs
- Weekly/unit SLOs

Student Learning Outcomes (objectives)
- Importance of weekly or unit SLOs (see lesson plan handout)
- Guide the delivery of instruction (method)
  - Direct learning activities
  - Direct assessment/evaluation method

Student Learning Outcomes: What Learning Domain?
- Perform a head-to-toe assessment.
- Analyze current evidence to determine best practices for treating pre-eclampsia.
- Use ethical principles to care for dying clients.
- Apply knowledge of pathophysiology to determine common assessment findings of COPD.
Examples of Common Learning Assessment Methods: Need to be Varied

- Written/online tests**
- Clinical evaluation tools**
- Clinical paperwork (e.g., concept maps, care plans, assessments)
- Discussion forums/boards
- Projects, papers, and presentations

TEST PLANS/BLUEPRINTS

- Directs test construction
- Provides evidence of measurement validity

COMPONENTS OF TEST PLAN

- Student learning outcomes (most important factor in test writing!)
- Tests should focus on concepts and align with test plans
COMPONENTS OF TEST PLAN

• Specifies cognitive level (revised Bloom’s [Anderson & Krathwohl])—
  1. Remembering (knowledge) is the lowest level, involves regurgitation of facts and information

COMPONENTS OF TEST PLAN (cont’d)

2) Understanding (Comprehension) tests for recollection of facts, principles, theories, or procedures (only one) to answer question.

COMPONENTS OF TEST PLAN (cont’d)

3) Applying (application) (and higher) stimulate critical thinking (includes analyzing, evaluating, and creating)

  Requires student to critically think to make clinical decisions!!!

  * Student is asked to apply knowledge from at least two areas or concepts to a specific clinical situation
A client with chronic bronchitis is admitted to the unit. What is the most common cause of this disease?
A. Smog
B. Smoking
C. Coal dust
D. Alcohol use

*SLO = Identify risk factors for chronic bronchitis.*

The nurse prepares to give heparin subcutaneously. The nurse knows that this drug is what classification?
A. Antibiotic
B. Antifungal
C. Anticoagulant
D. Antidiuretic

*SLO = Identify drugs that are common anticoagulants.*

The nurse is teaching a new diabetic client about foot care. Which statement by the client indicates a need for further teaching?
A. “I will wash and dry my feet every day.”
B. “I will use lotion every day to prevent dryness.”
C. “It’s OK for me to walk barefooted this summer.”
D. “I will inspect my feet carefully every day.”

*SLO = Evaluate the effectiveness of health teaching about impaired perfusion associated with diabetes.*
**What cognitive level?**

When the nurse walks into the room, the client throws a tray towards the nurse. What behavior does this represent?

A. Assault  
B. Battery  
C. Libel  
D. Slander

**What cognitive level?**

A client who had an open reduction of the tibia reports increased pain, swelling, and numbness in the affected leg. What action will the nurse take first?

A. Administer pain medication.  
B. Call the surgeon immediately.  
C. Elevate the affected leg.  
D. Perform a neurovascular assessment.

---

**Questions?**
ANALYZING TEST RESULTS

Need these statistics (see handout):
* Reliability coefficient (KR-20)
* Measures of central tendency
* Difficulty level and item analysis
* IDR and/or PBS

TEST RELIABILITY

• Measures consistency of test scores
• Use KR-20 or Cronbach’s alpha to measure internal consistency
• Ideal KR-20 is 0.80 or greater, but can be difficult to achieve

TEST ANALYSIS AND ITEM DECISIONS

1. Compute mean, mode, median
2. Review item difficulty
   (The p values of each item) = what percent of the group got the item correct;
   - less than 50%, the item could be too difficult
   - 90% or higher got it correct, it may be too easy or is MASTERY!
3. Review the discrimination data, or item discrimination ratio (IDR) of difficult items:
   - The percent of upper 27% of class who answered correctly minus the percent of the lower 27% who answered correctly

Acceptable IDR = 25% (.25) or higher; if negative or very low, 3 choices:
   1. Accept 2 answers.
   2. Nullify item.
   3. Throw item out (least desired).

Point Biserial Discrimination (PBS or BS) = more useful to measure discrimination because it shows a test item's ability to discriminate based on test as a whole
TEST ANALYSIS AND REVISION (cont’d)

Interpretation of PBS for correct answer:
• 0.30 and > ... Very Good Item
• 0.20 – 0.29 ... Reasonably Good Item
• 0.09 – 0.19 ... Marginally Acceptable Item
• Below 0.09 ... Poor Item (should be carefully reviewed and possibly nullified)

TEST ANALYSIS AND REVISION (cont’d)

• Look at correct answer’s PBS value first. If positive, then highest test scorers got the item correct.
• Then look at the distractors’ PBS value. Want negative or very low values to show true discrimination (if available).

TEST ANALYSIS AND REVISION (cont’d)

Consider these statistics for a MC item:

<table>
<thead>
<tr>
<th>letter</th>
<th>p-value</th>
<th>PBS value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.75</td>
<td>0.45</td>
</tr>
<tr>
<td>B</td>
<td>0.15</td>
<td>-0.02</td>
</tr>
<tr>
<td>C</td>
<td>0.06</td>
<td>-0.13</td>
</tr>
<tr>
<td>D</td>
<td>0.14</td>
<td>0.05</td>
</tr>
</tbody>
</table>
TEST ANALYSIS AND REVISION (cont’d)

Consider these statistics for a MC item:

<table>
<thead>
<tr>
<th>p value</th>
<th>PBS value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.42</td>
</tr>
<tr>
<td>B</td>
<td>0.28</td>
</tr>
<tr>
<td>C</td>
<td>0.16</td>
</tr>
<tr>
<td>D</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Clinical Evaluation Tools

• Establish validity by matching course learning outcomes/course objectives (see handout).
• Delineate specific competencies that are measurable for each outcome.

Clinical Evaluation Tools

• Observational experiences
• Preceptorship experiences
• Formative vs. summative assessments
Clinical Evaluation Tools

- Self-evaluation by students
- Documentation to support performance
- Rating scale vs. met/not met or S/U

**PRACTICE QUESTIONS**

**PRACTICE QUESTION #9**

A nursing program’s policy states that students can progress if they achieve a 78% course grade (no rounding). What is the nurse educator’s best response to a student who wants her grade of 77.9% to be changed to a passing grade of 78%?

A. “I’ll check with my director about rounding up your grade.”
B. “The policy states that no student’s grade can be rounded.”
C. “I’ll see if I can convince faculty to change the policy.”
D. “You may grieve the grade if you’d like.”
**PRACTICE QUESTION #9**

A nursing program’s policy states that students can progress if they achieve a 78% course grade (no rounding). What is the nurse educator’s best response to a student who wants her grade of 77.9% to be changed to a passing grade of 78%?

A. “I’ll check with my director about rounding up your grade.”
B. “The policy states that no student’s grade can be rounded.”
C. “I’ll see if I can convince faculty to change the policy.”
D. “You may grieve the grade if you’d like.”

**PRACTICE QUESTION #10**

Which statement is appropriate as a program outcome for new nursing graduates?

A. Collaborate with the interprofessional team to meet optimum patient outcomes.
B. Perform a focused respiratory physical assessment.
C. Provide patient-centered care for the childbearing woman.
D. Compare and contrast major classifications of antihypertensive drugs.
PRACTICE QUESTION #11

Which student learning outcome reflects learning in the affective domain?
A. Apply knowledge of pathophysiology to identify typical assessment findings of COPD.
B. Communicate effectively with members of the health care team.
C. Provide patient-centered care for the childbearing woman.
D. Demonstrate professional nursing behaviors to establish a trusting relationship.

PRACTICE QUESTION #12

Which student learning outcome reflects cognitive learning at the analysis level?
A. Apply knowledge of pathophysiology to identify typical assessment findings of COPD.
B. Discuss the steps of the evidence-based practice process.
C. Accurately calculate pediatric drug dosages for patient safety.
D. Explain the common risk factors for skin cancer.
PRACTICE QUESTION #12
Which student learning outcome reflects cognitive learning at the analysis level?
A. Apply knowledge of pathophysiology to identify typical assessment findings of COPD.
B. Discuss the steps of the evidence-based practice process.
C. Accurately calculate pediatric drug dosages for patient safety. **
D. Explain the common risk factors for skin cancer.

PRACTICE QUESTION #13
A test item has a p value of 0.63 (p = 0.63). What does this value indicate to the nurse educator?
A. 63% of the students taking the test got the item correct.
B. The test item discriminates very well.
C. The test is valid and reliable.
D. 63% of the students taking the test got the item incorrect.
**PRACTICE QUESTION #14**

A test item has a p value of 0.00 (p = 0.00). What is the most likely explanation for this value?
A. None of the students got the answer wrong.
B. The test item was not correctly keyed.
C. The test item discriminated very poorly.
D. The test item needs to be rewritten.

**PRACTICE QUESTION #14**

A test item has a p value of 0.00 (p = 0.00). What is the most likely explanation for this value?
A. None of the students got the answer wrong.
B. The test item was not correctly keyed. **
C. The test item discriminated very poorly.
D. The test item needs to be rewritten.

**PRACTICE QUESTION #14**

A unit exam has a KR = 0.78. How should the nurse educator interpret this value ?
A. The test has high measurement validity.
B. The test is poorly written.
C. The test is too easy.
D. The test is very reliable.
PRACTICE QUESTION #14

A unit exam has a KR = 0.78. How should the nurse educator interpret this value?
A. The test has high measurement validity.
B. The test is poorly written.
C. The test is too easy.
D. The test is very reliable.**

PRACTICE QUESTION #15

Which tool will the nurse educator use to establish test validity?
A. Test blueprint
B. Kuder-Richardson
C. Point biserial coefficient
D. Item discrimination ratio
**PRACTICE QUESTION #16**

Review these statistics for a MC item and answer the following question:

<table>
<thead>
<tr>
<th>p value</th>
<th>PBS value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = 0.22</td>
<td>0.33</td>
</tr>
<tr>
<td>B = 0.48</td>
<td>-0.02 CORRECT</td>
</tr>
<tr>
<td>C = 0.16</td>
<td>-0.19</td>
</tr>
<tr>
<td>D = 0.14</td>
<td>-0.02</td>
</tr>
</tbody>
</table>

What does this item demonstrate regarding its ability to discriminate?

A. More students with lower test scores got the item correct than those with high test scores.
B. The test item was too difficult for both the high and low groups.
C. More students with lower test scores missed the item so it discriminates well.
D. The point biserial value is not a useful statistic to measure test discrimination.

---

**PRACTICE QUESTION #16**

Review these statistics for a MC item and answer the following question:

<table>
<thead>
<tr>
<th>p value</th>
<th>PBS value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = 0.22</td>
<td>0.27</td>
</tr>
<tr>
<td>B = 0.48</td>
<td>-0.02 CORRECT</td>
</tr>
<tr>
<td>C = 0.16</td>
<td>-0.19</td>
</tr>
<tr>
<td>D = 0.14</td>
<td>0.07</td>
</tr>
</tbody>
</table>

What does this item demonstrate regarding its ability to discriminate?

A. More students with lower test scores got the item correct than those with high test scores. **
B. The test item was too difficult for both the high and low test score groups.
C. More students with lower test scores missed the item so it discriminates well.
D. The point biserial value is not a useful statistic to measure test discrimination.

---

**PRACTICE QUESTION #17**

Which statement by a novice educator indicates a need for follow up by the mentor regarding formative clinical evaluation of students?

A. “I need to provide feedback on a regular basis about each student’s progress.”
B. “I should compare each student’s weekly clinical performance with the weekly clinical learning outcomes.”
C. “I should include frequent feedback for students on their clinical paperwork assignments.”
D. “I need to determine if each student’s performance is a pass or fail for each week.”
PRACTICE QUESTION #17

Which statement by a novice educator indicates a need for follow up by the mentor regarding formative clinical evaluation of students?
A. “I need to provide feedback on a regular basis about each student’s progress.”
B. “I should compare each student’s weekly clinical performance with the weekly clinical learning outcomes.”
C. “I should include frequent feedback for students on their clinical paperwork assignments.”
D. “I need to determine if each student’s performance is a pass or fail for each week.” **

PRACTICE QUESTION #18

Which statement by a novice educator indicates a need for follow up by the mentor regarding precepted clinical experiences for pre-licensure students?
A. “The preceptor should meet our criteria for selection for the course.”
B. “I need to frequently monitor the preceptor and student experiences.”
C. “The preceptor will complete the student’s summative clinical evaluation.”
D. “I will ask students to evaluate their preceptors and their overall clinical learning.” **
PRACTICE QUESTION #18

Which evaluation method is most appropriate for the nurse educator to use for grading a scholarly paper?
A. Likert scale
B. Grading rubric
C. Peer evaluation
D. Self-evaluation

Key References *

Questions?