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# Developing an Annual Skills Mastery Assessment (ASMA) Exam

Greg L. Alston and Bryan L. Love  
Wingate University School of Pharmacy  
Wingate, NC

# Objectives

- By the end of this session, the attendees should be able to explain:
  - Why an annual assessment exam is necessary.
  - The key principles used to design the exam.
  - An outline of the process for exam creation.
  - Why WUSOP chose this particular assessment format.
  - The value of the results available from an annual assessment exam.

# ACPE Standards 2007

- Develop the knowledge, skills, attitudes and values in its graduates to become competent (#9)
- Define the program Terminal Ability Based Outcomes (TABO) (#10)
- Shape these outcome ability sets around patient care, managing health care resources, and promoting wellness (#12)
- Build a curriculum that achieves those outcomes (#10)



# ACPE Standards 2007

- Use valid curricular assessments to produce evidence that graduates have acquired these ability sets (#11)
- Use a variety of effective assessment tools that are reliable, valid and systematically applied throughout the professional degree program (#15)
- Use evidence from these assessment tools to consistently improve educational outcomes (#15)



# Ability vs. Achievement

- The cognitive domain consists of all intellectual behavior including two major categories:
  - Achievement refers to easily changeable behaviors or short term learning.
    - Teachers tend to influence this most often
  - Ability refers to harder to change behaviors or long term learning integrating multiple achievements.
    - Emerges as students gain competence

Haladyna TM. *Writing Test Items To Evaluate Higher Order Thinking*. Allyn & Bacon; 1997.

## Example of Knowledge, Skills and Ability

Writing Achievement	Writing Abilities
Knowledge: Knowing about spelling rules, punctuation rules, capitalization rules	Ability to write a persuasive essay
Skills: Spelling, punctuation, capitalization, diagram a sentence	

Haladyna TM. *Writing Test Items To Evaluate Higher Order Thinking*. Allyn & Bacon; 1997.

# The Real Question

- After enrollment, how do you verify that students are learning what they need to be learning?
  - As they progress through the curriculum
  - In time to make mid-course corrections
  - To inform curricular change
  - To create competent graduates



# WUSOP Philosophy

- Utilize feedback from various sources to provide context to exam scores
  - Course evaluations
  - Faculty feedback
  - Stakeholder feedback
- Utilize ASMA as program assessment tool for reporting to:
  - ACPE and SACS
  - The University
  - The Administration
  - The Faculty
  - The Students

# WUSOP ASMA Exam

- An ASMA exam has been used since 2004; significantly updated in 2008
  - Centered around Terminal Ability Based Outcomes statements (TABO)
  - Multiple choice single best answer with no penalty for guessing
  - Four versions administered to all students in middle of the spring semester



# Assessment Design

- Test Items written around TABO not knowledge
  - Abilities are distinguished from Achievements
- Items written by faculty non-expert
- Item Cut scores generated by faculty panel
- Items reviewed for quality by experts
- Students should understand the purpose of the exam
- Students should not be told which specific TABO would be tested
- Faculty should not discuss exam items with students before or after the exam
- Test items should cover the entire curriculum

Downing SM, Haladyna TM. Test. Test Item Development: Validity Evidence from Quality Assurance Procedures 1997



# Assessment Design

- “Fair” to include test items never covered in lecture
  - Expect students to learn from their experiential education
- Include novel stretch items in limited quantities
- Include items with a range of difficulty



# Exam Development Process



# Development Process

- Begin with the end in mind
- Build around TABO
- Item writing guidelines
- Item review process
- Cut score methodology
- Test blueprint
- Administer, analyze, and report



# Program Factors Influencing WUSOP Assessment Program

- Rural location provided limits access to standardized patients needed to develop a sophisticated OSCE program
- Culture of assessment already included an annual exam for all students
- Non-traditional integrated curriculum made matching a commercially available instrument to our needs difficult



# Financial Factors Influencing WUSOP Assessment Program

- LXR Test™ Software already in place
- Faculty shortages put a premium on the use of faculty time and energy
- Limited funds were available for additional staff, technology, or materials
- Maximize return on investment



# Additional Factors Influencing WUSOP Assessment Program

- To meet the needs of all WUSOP stakeholders
- To provide formative student feedback
- To create an assessment tool that was reasonably reliable, reasonably valid and generated useful data





# 2008 ASMA Results

- Reliability  $\alpha$  (.65 -.82)
- Face validity
- Content Validity
- Criterion-related validity
- Reports
  - Mastery Summary
  - Mastery Specifications
  - Mastery Detail
  - Individual Mastery

# Final Thoughts

- WARNING: The goal is to improve learning.
- In general:
  - Be very careful not to allow High Stakes exams to negative alter the learning environment
  - Be careful in assuming exam scores have predictive value for any one student
- It is difficult to correlate any academic measurement, GPA, NAPLEX scores with the professional career competency



# References

- ACPE. Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree. The Accreditation Council for Pharmacy Education Inc. Effective July 1, 2007.
- Case SM SD. Constructing written test questions for the basic and clinical sciences. 3rd Edition ed. Philadelphia, PA: National Board of Medical Examiners, 2002.
- Downing SM, Haladyna TM. Test Item Development: Validity Evidence from Quality Assurance Procedures. *Applied Measurement in Education* 1997;10(1):61-82.
- Haladyna TM. *Writing Test Items To Evaluate Higher Order Thinking*. Needham Heights, MA 02194-2310: Allyn & Bacon; 1997.
- [www.teaching-assessment.com](http://www.teaching-assessment.com): Access to WUSOP award packet, reports, faculty development tools, and other “how-to” information.