DOMAINS OF LEARNING

Writing Goals and Objectives

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DOMAINS OF LEARNING

At the conclusion of the presentation on Learning Domains and writing objectives, the laboratory sciences teacher will be responsible to:

- Identify three educational learning domains.
- Characterize the specific hierarchy (taxonomy) in each learning domain.
- Assess the problem-solving level between the three domains as related to similarities and differences for each.
- Write goals and behavioral objectives in the correct domain and taxonomy level.

DOMAINS OF LEARNING

LEARNING DOMAIN	RELATED BEHAVIOR	AUTHORS
COGNITIVE	Intellect	Bloom - 1956
PSYCHOMOTOR	Movement	Simpson, Harrow
AFFECTIVE	Feelings Emotions Values	Krathwohl
PERCEPTUAL	Sensory-Dependent	Moore

COGNITIVE

- What need to KNOW
- Intellect
- **Knowledge**

PSYCHOMOTOR

- Physically DOING
- Movement
- **Skills**

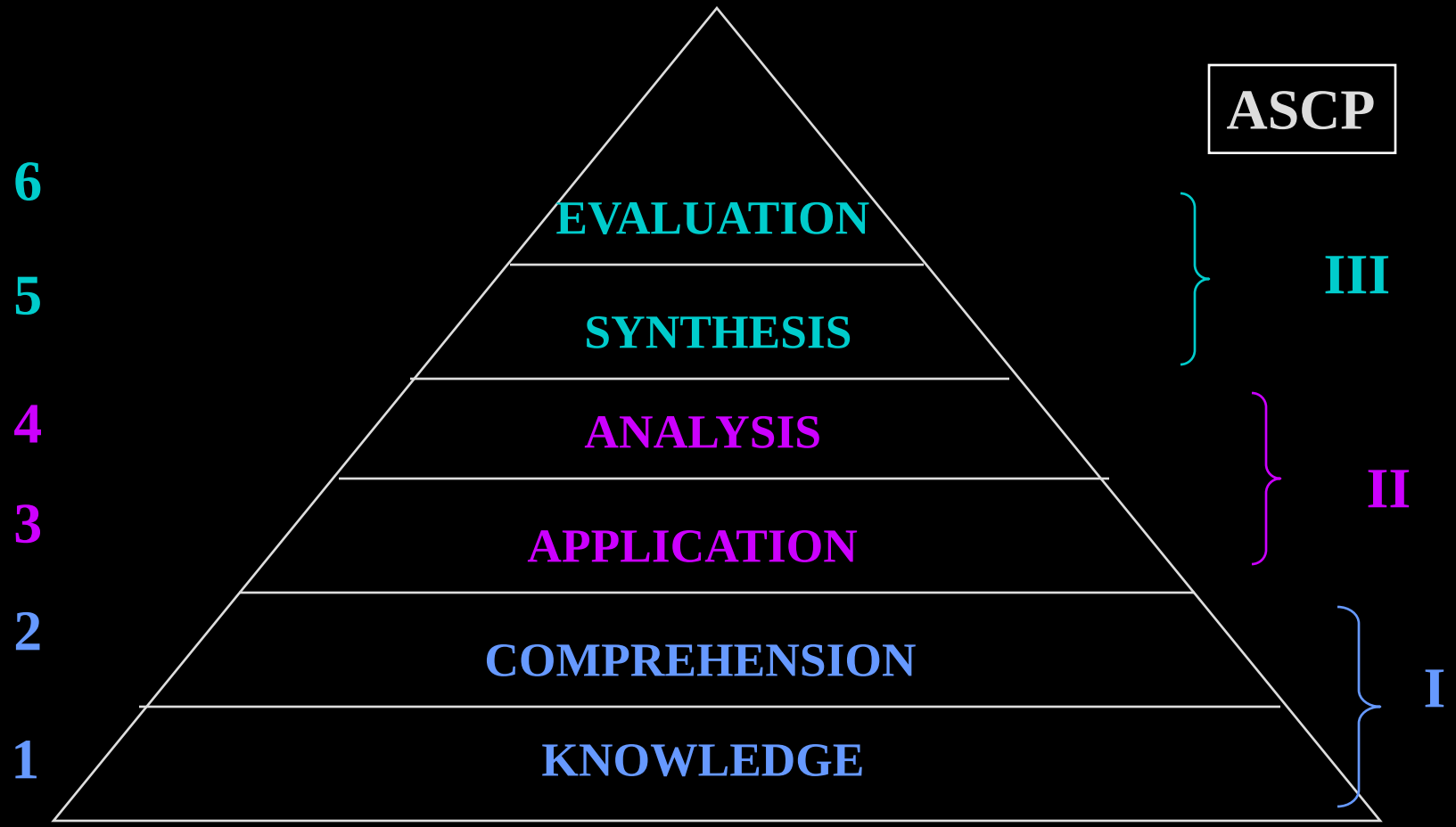
AFFECTIVE

- Feelings
- Emotions
- Values
- Behaviors
- **Attitudes**

TASKS in 3 DOMAINS

- Psychomotor = do
  - Skills
- Cognitive = know
  - Knowledge
- Affective = behavior
  - Attitude

COGNITIVE DOMAINS OF LEARNING



COGNITIVE – Knowledge (I/1)

- Recall of facts
- Remember definitions
- Recognize information
- Remembers learned material

- Define
- List
- Match
- Name
- Order
- Repeat
- Select
- State

COGNITIVE – Comprehension (I/2)

- Communicating an idea
- Translating idea into new or different form
- May not relate it to other material
- Explaining material that has been learned

- Associate
- Describe
- Discuss
- Explain
- Interpret
- Restate
- Review
- Summarize

COGNITIVE – Application (II/3)

- Relate or apply ideas to new situations
- Uses what comprehends from various areas
- May be ideas, rules of procedures, methods, principles, theory.
- Uses knowledge to find new solutions

- Adapt
- Calculate
- Develop
- Extrapolate
- Generalize
- Modify
- Predict
- Relate
- Utilize

COGNTIIVE – Analysis (II/4)

- Examine elements, relationships, organizational principles
- Break “things” down to parts
- Uncover unique characteristic of concept or event

- Analyze
- Compare
- Contrast
- Correlate
- Criticize
- Debate
- Differentiate
- Discriminate

COGNITIVE – Synthesis (III/5)

- Hypothesize
- Create a plan
- Reorganize into new way
- Create new or original concepts
- Inductive, not deductive reasoning.
- Compile
- Create
- Design
- Devise
- Formulate
- Propose
- Reorganize
- Synthesize

COGNITIVE – Evaluation (III/6)

- Ability to judge
- Make informed decisions
- Accept or reject “things” or events
- Judge the value for a given purpose

- Appraise
- Assess
- Conclude
- Critique
- Evaluate
- Justify
- Recommend
- Validate

COGNITIVE DOMAIN HIERARCHY

- I = Memorize
- II = What went wrong?
  - Also – charts, photos, slides, lab math
- III = What are you going to do to fix it?
  - This time?
  - Next time?

COGNITIVE Verbs

- Do NOT use:
  - Appreciate
  - Believe
  - Develop
  - Feel
  - Grasp
  - Know
  - Learn
  - Master
  - Want
  - Understand
- Not Measureable

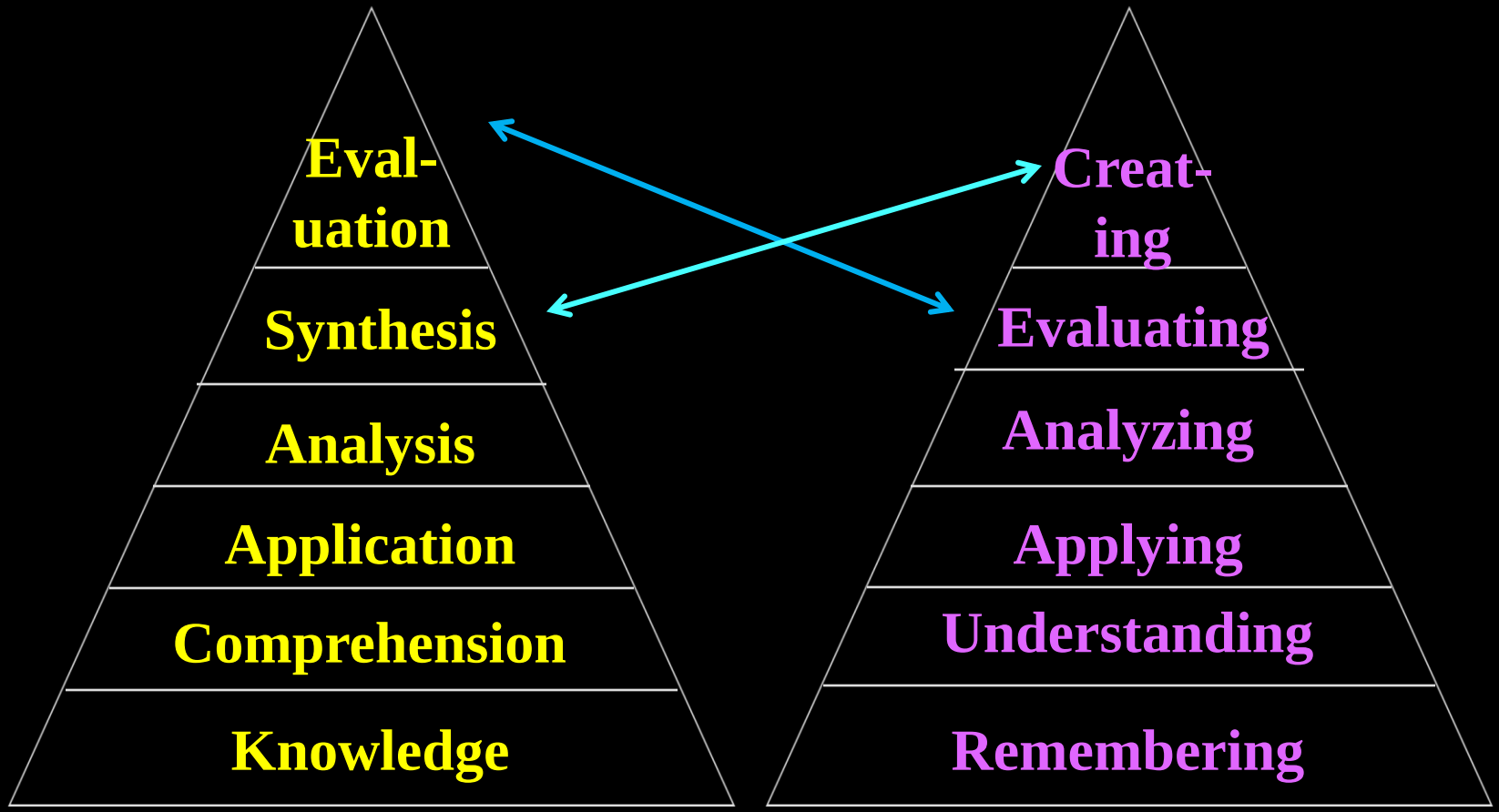
COGNITIVE for Stains

- J. RESULTS
  - State the color results
  - Correlate reagent/dye to the color results
  - Evaluate staining results to check for potential sources of error
- K. MISC.
  - Define terminology
  - Select instrument/ equipment appropriate to staining procedure
  - Analyze advantages and disadvantages of various staining procedures

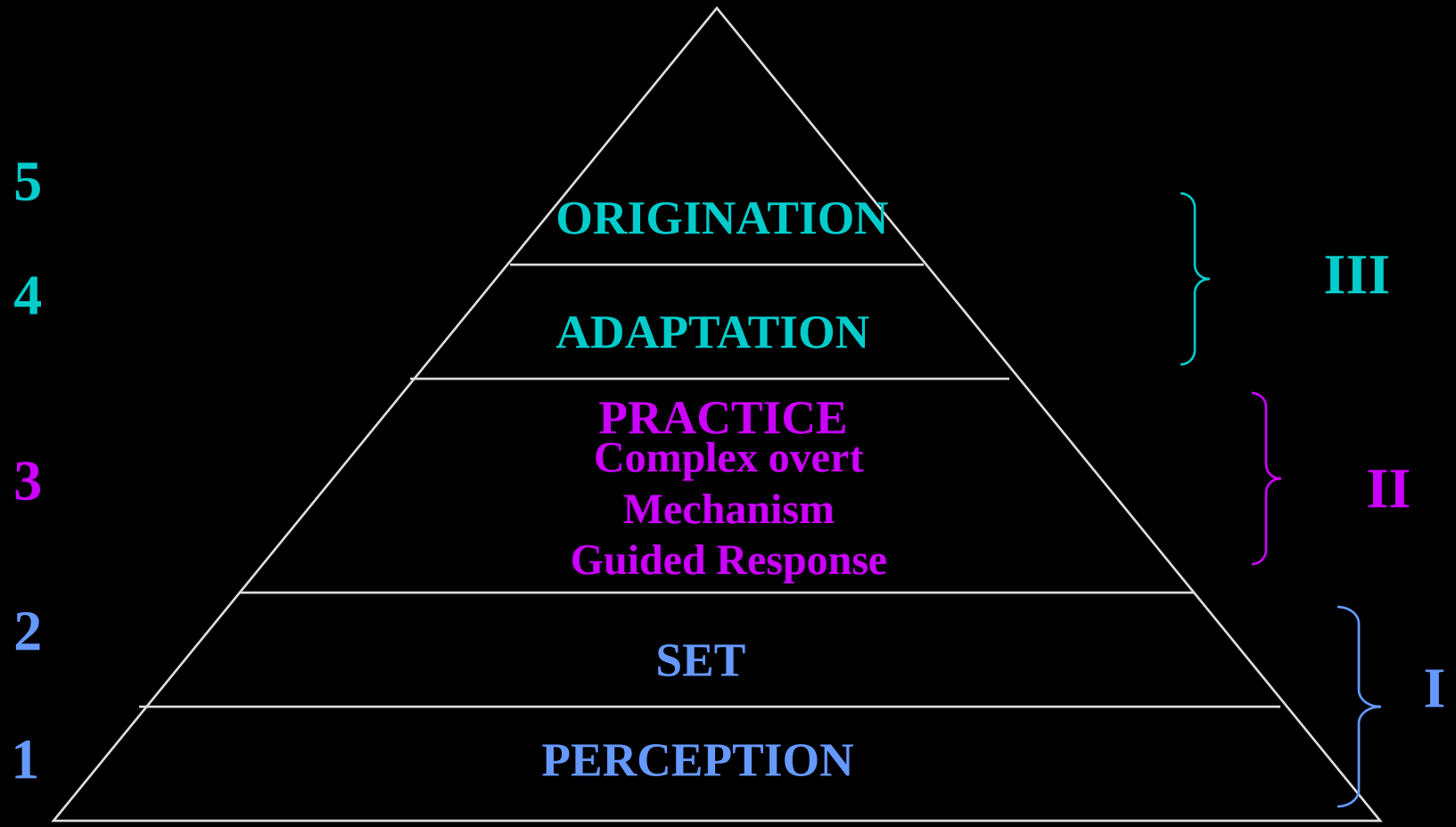
Proposed Changes to Cognitive Hierarchy

- Rename - Use verbs not nouns
- Rearrange top 2
  - Original order = Synthesis → Evaluation
  - Proposed order = Evaluating → Creating
- Verbs in lists
  - Same in 1st 4 tiers
  - Evaluating/Evaluation are the same verbs
  - Synthesis and Creating are the same verbs

Original vs. Proposed Bloom's Cognitive



PSYCHOMOTOR DOMAINS OF LEARNING = Doing



PSYCHOMOTOR DOMAINS I – 1 & 2

- PERCEPTION (1)
  - Aware of
  - Detect
  - Observe
  - Identify
  - See
  - Smell
  - Touch
- SET (2)
  - Begin
  - Move
  - React
  - Show
  - Start
  - Volunteer

PSYCHOMOTOR DOMAIN (II – 3)

- GUIDED RESPONSE
  - Practicing while being guided
- ACQUISTION/MECHANISM
  - Confident, not a lot of attention needed.
- MANIPULATION/COMPLEX OVERT RESPONSE
  - Very little energy/time, accurate.

PSYCHOMOTOR DOMAIN VERBS

- Add
- Adjust
- Administer
- Agitate
- Approach
- Aspirate
- Assemble
- Wash
- Weigh
- Wipe
- Wrap

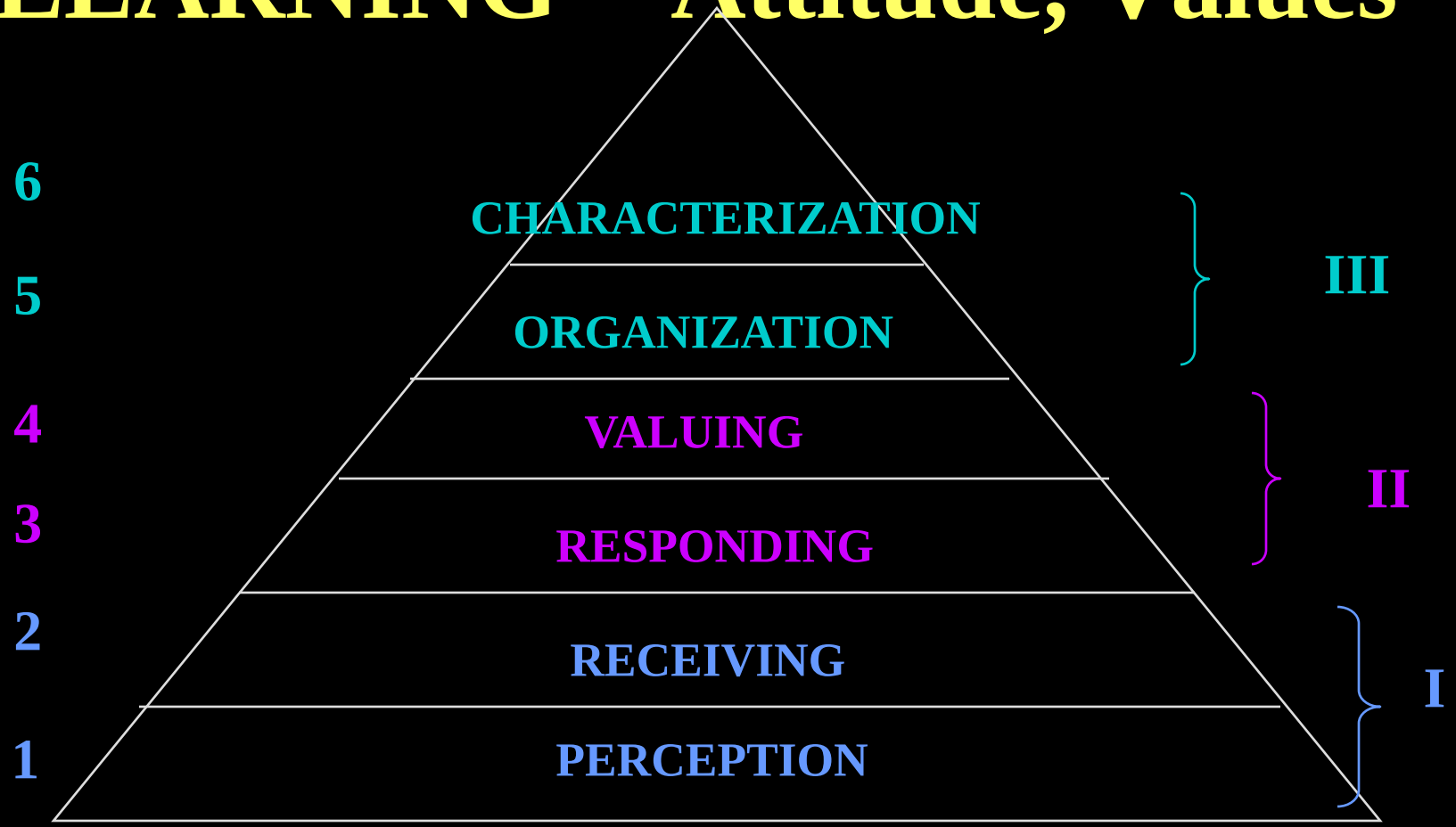
PSYCHOMOTOR DOMAIN III

- ADAPTATION/ APPLICATION (4)
  - Alters or modifies activities
  - Revises
  - Varies
- INTEGRATION/ ORIGINATION (5)
  - Creates new motor skills
  - Composes
  - Originates

PSYCHOMOTOR OBJECTIVES - Staining

- Select appropriate control
- Prepare solutions
  - Weigh
  - Measure
  - Mix
  - pH
  - Store
- Perform stain
  - Place slide
  - Watch temp, etc.
  - Compare intensity
  - Coverslip correctly

AFFECTIVE DOMAINS OF LEARNING = Attitude, Values



AFFECTIVE DOMAIN - I

- PERCEPTION (1)
  - Aware
  - Alert
  - Realize
  - (unobservable)
- RECEIVING (2)
  - Ask
  - Follow
  - Obey
  - Reply
  - (unobservable or observable)

AFFECTIVE DOMAIN - II

- RESPONDING (3)
  - Answer
  - Comply
  - Cooperate
  - Discuss
  - Respond
  - (observable)
- VALUING (4)
  - Accept
  - Assume responsibility
  - Initiate
  - Justify
  - Share
  - (unobservable)

AFFECTIVE DOMAIN - III

- ORGANIZATION (5)
  - Relates value to new value
  - Alter
  - Advocate
  - Appreciate
  - Dedicated to
  - (observable)
- CHARACTERIZATION (6)
  - Value becomes integrated into learner's personality
  - Influence
  - Qualify
  - Question
  - (unobservable)

AFFECTIVE OBJECTIVES

- Value quality of test performed by:
  - performing procedures accurately and precisely
  - performing, documenting and evaluating QC
  - reporting test results that are reasonable and validated
- Display organization by:
  - Sequencing and prioritizing tasks for completion within time constraints
  - Keeping work area, supplies, etc. neat and clean
  - Maintaining legible, thorough worksheets

PERCEPTUAL-Sensory Dependent

- Put hand on hot plate = hot = move hand
- Article on “Sense of Touch Colors Our View of the World” by Cassandra Willyard, “Science Now”, June 24, 2010
  - Holding heavy clipboard = issue more important
  - Put together puzzle with rough texture = paragraph on two people discussing ranked as more adversarial and competitive
  - Sitting in hard chairs = less likely to negotiate

OUTSTANDING vs. EXCELLENT

- OUTSTANDING
  - Works hard
  - Accepts status quo
  - Reactive
  - Receives assignments
  - Aware of own responsibilities
  - Identifies problems
  - Possesses knowledge
- EXCELLENT
  - Works smart
  - Seeks Cont. Improv.
  - Proactive
  - Seeks assignments
  - Aware of team responsibilities
  - Suggests solutions
  - Communicates knowledge

Mission Statements
Goals
Competencies
Objectives

Relationship in the Educational Process

- Mission Statement
- Goals
- Competencies
- Objectives
- Teaching/Training
- Evaluations
- (Re-do if necessary)

INFLUENCED BY:

- Government
- Accrediting Agencies
- Professional Societies
- Certifying Agencies
- Academia
- Hospital/Lab

MISSION STATEMENTS

- Synonyms
  - Goal
  - Philosophy
- Statements of direction
  - Broad
  - General
  - Non-specific

MISSION STATEMENTS

- About the:
  - institution
  - program
- NOT about the:
  - tech/student/participant
  - supervisor/teacher/speaker
  - can have own personal mission statement

MISSION STATEMENTS

- One to three sentences
- Clear
- Concise
- Written statement of the organization's purpose

MISSION STATEMENTS

- The National Society for Histotechnology:
  - is a non-profit organization, committed to the advancement of histotechnology, its practitioners and quality standards of practice through leadership, education and advocacy.

Mission Statement Key Words

- Hospital
  - High quality
  - Excellence
  - Patient care
  - Education/Research
  - Community
  - Everyone
- Laboratories
  - High quality/CQI
  - Accurate
  - Cost-Effective
  - Timely
- Education Programs
  - Excellent teaching
  - Make students into techs

GOALS

- 1 year goal to achieve Mission Statement
- Things you need to do that year
- More specific than Mission Statements

GOALS

- Relate to the Mission
- One sentence each
- Very specific
- Check off - Yes or NO - as to if completed

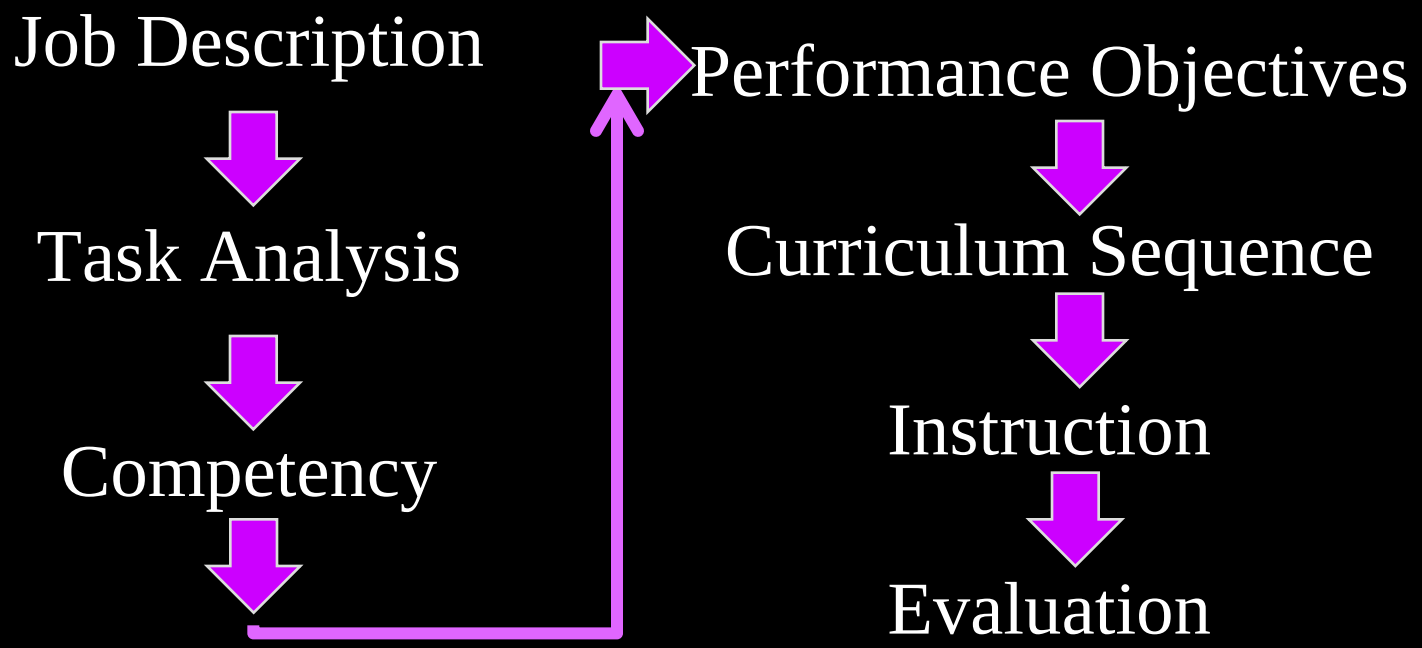
GOALS

- Update the Anatomic Pathology Chemical Hygiene Plan
- Revise the new employee handbook.
- Implement a new Competency Assessment program for histotechs
- Write an autopsy diener manual
- Pass the CAP inspection

COMPETENCY STATEMENT

- Level of Standard for all “skills” in the field of histotechnology
  - embedding, sectioning, staining, safety, etc.
  - Knowledge (cognitive), doing (psychomotor), attitude/behavior (affective)
  - how good/fast/accurate

FUNCTION


Job Description
Task Analysis
Competency
Performance Objectives
Curriculum Sequence
Instruction
Evaluation

JOB DESCRIPTION
List tasks required to do job

- Psychomotor - do
  - Accession
  - Cytoprep
  - Processing/Decalcify
  - Frozen Section
  - Grossing
  - Embedding, Sectioning
  - Staining (H&E and Special)
  - Coverslipping/Labeling
- Cognitive–knowledge of
  - Histology, Chemistry
  - Safety procedures
  - Medical Terminology
- Affective - attitude
  - Be a team member
  - Communicate effectively
  - Prioritize/organize tasks
  - Adapt to changes
  - Be reliable

Task Analysis

- Observation
- Stop watch
- Count (errors, # blocks cut, etc.)
- How many
- How accurate

COMPETENCY

- Synonyms:
  - Program Goals
  - Standards
  - Essentials
- More Specific than Mission Statements

COMPETENCY

- Student/Learner/Tech oriented
- Student/Learner/Tech outcomes
- Describe
  - General statement of essential knowledge, skills, attitude needed to function on job, or expected to develop
  - Not include – how many, how well, etc.

COMPETENCY

- Often originate from profession
  - ASCP
  - NSH
  - NAACLS

COMPETENCY ASCP BOR

- **HT and HTL**
  - Knowledge
  - Technical Skills
  - Problem Solving and Decision-Making
  - Communication
  - Teaching and Training Responsibilities
  - Supervision and Management (HTL only)

ASCP BOR COMPETENCY

- Career Entry
- Technologist level encompasses competencies of the technician level.

ASCP BOR COMPETENCY

- **Knowledge:**
  - **HT**: working comprehension of technical and procedural aspects of lab tests.
  - **HTL**: understanding of underlying scientific principles of lab testing as well as the technical, procedural and problem-solving aspects.

ASCP BOR COMPETENCY

- **Technical Skills:**
  - **HT**: Follows established procedures.
  - **HTL**: Participates in the evaluation of new techniques and procedures in the lab.

ASCP BOR COMPETENCY

- Problem Solving and Decision-Making
  - **HT**: Recognizes unexpected results and instrument malfunction and takes corrective action according to predetermined criteria or refers problem to the appropriate supervisor.
  - **HTL**: Has ability to exercise initiative and independent judgment in dealing with a broad scope of procedural and technical problems.

http://ascp.org/PDF/BOC-PDFs/Guidelines/ExaminationContentGuidelineHT.aspx

PERFORMANCE OBJECTIVES

- Related to learner/student
  - What they will be able to do after training
- NOT about what is being taught
  - Not about class, workshop, training session

OBJECTIVES

- Synonyms:
  - Performance objectives
  - Instructional objectives
  - Behavioral objectives
  - Specific learning outcomes

OBJECTIVES:

- Specific, behavioral statements
- Describe what must tech/student must demonstrate to show that they have acquired competencies

OBJECTIVES:

- Several objectives are usually written for each competency.
- Objectives cover each domain of learning, and various taxonomy levels.

A-B-C-D of OBJECTIVES

- A = Audience
- B = Behavior
- C = Condition
- D = Degree

A-B-C-D of OBJECTIVES

- A = Audience
  - Nature of the learner
  - Who is doing the learning

A-B-C-D of OBJECTIVES

- A = Audience
  - The histotechnologist will . . .
  - The surgical pathology lab assistant will . .
  - The workshop participants will . . .
  - The pathology employee will . . .

A-B-C-D of OBJECTIVES

- A = Audience
  - NOT who is doing the teaching
    - NOT: The instructor will . . .
    - NOT: The presenter will . . .

A-B-C-D of OBJECTIVES

- B = Behavior
  - What will the learner be doing?
  - Action verbs (domain lists)
    - Specific (no interpretation)
    - Measurable

A-B-C-D of OBJECTIVES

- B = Behavior
  - Good examples:
    - List the reagents in the Gomori Trichrome solution
    - Locate the fire safety equipment
    - Cut sections of liver tissue

A-B-C-D of OBJECTIVES

- B = Behavior
  - Poor examples:
    - Know the fire safety rules
    - Understand staining
    - Use equipment

A-B-C-D of OBJECTIVES

- C = Condition
  - Physical conditions that will be present during evaluation.
    - Givens
    - Optional extras

A-B-C-D of OBJECTIVES

- C = Condition
  - Without the use of reference textbooks . . .
  - In accordance with criteria given in the procedure manual . . .
  - Given a slide of liver and all necessary reagents . . .

A-B-C-D of OBJECTIVES

- C = Condition
  - Can use more than one condition
    - On a written exam, without the use of reference materials, and within the one hour time limit . . .
    - Upon completion of this workshop, and with the use of the hand out provided, . . .
    - After training on the processor, and with the use of the manual, . . .

A-B-C-D of OBJECTIVES

- D = Degree
  - Also called the performance criterion
  - Indicates the acceptable minimum level of performance
    - how often
    - how accurate

A-B-C-D of OBJECTIVES

- D = Degree
  - May be included (e.g., minimum 75%)
  - Or not included – then implied
    - all or none
    - 100% accuracy
    - without error

A-B-C-D of OBJECTIVES

- D = Degree
  - If many objectives are listed for a competency, degree may be listed in the header.

A-B-C-D of OBJECTIVES

- D = Degree
  - With a minimum score of 75% . . .
  - At least 95% of the time . . .
  - With 100% accuracy.
  - On a practical exam, with a microscope, the student will identify liver tissue. (*all is implied)*

OBJECTIVE ORDER

- C
- A
- B
- D

In the clinical laboratory (C), the histotech (A) will prepare (B) the working reagents according to written protocol (D).

ONE HEADER MANY OBJECTIVES

- At all times in the laboratory, the histotech will be responsible to:
  - Value quality of work by:
    - Performing procedures accurately and precisely
    - Evaluating control slides of all procedures
    - Turning in slides that are clean, organized and correctly identified
    - Maintaining the work area in a neat and clean appearance
    - Replacing all reagents that are depleted, expired, or low
  - Demonstrate judgement by:
    - Recognizing discrepancies in results
    - Suggesting course of corrective action
    - Seeking troubleshooting information

Phrasing

- The student will be able to . . .
  - Responsibility is on instructor/program
- The student will . . .
- The student will be responsible to . . .
  - Responsibility is on learner

Did We Meet Our Objectives?

At the conclusion of the presentation on Learning Domains and writing objectives, the laboratory science teacher will be responsible to:

- Identify three educational learning domains.
- Characterize the specific hierarchy (taxonomy) in each learning domain.
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- Write goals and behavioral objectives in the correct domain and taxonomy level.

Next NSH Education Teleconferences

- **Feb. 6, 2013** = Evaluations Part I: Writing Written Exams, by Peggy A. Wenk, HTL(ASCP)SLS
- **Mar. 6, 2013** = Evaluations Part II: Writing Psychomotor and Affective Evaluations, by Peggy A. Wenk, HTL(ASCP)SLS
- **Nov. 6, 2013** = Learning Styles and Teaching Styles: Which Should Drive the Other?, by Glenda F. Hood, M.Ed, HT(ASCP)