How to Develop Education using Objectives and Evaluations For Outcome Based Training

Evaluation Key Provides Education Directed Outcomes

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OBJECTIVES

- List the three learning domains used in writing instructional objectives.
- Explain the levels of complexity in each of the three learning domains.
- Write Three objectives for performing a risk assessment of a chemistry analyzer

Curriculum for Healthcare Professionals

- Accredited school
- Professionals need to be able to perform tasks in their scope of practice
- Pass certification exam to obtain a license
- License; usually requires CEU or CME hours annually to maintain

Certifying Exam

- All Exams during education
- Based off the course objectives
- test maps with equal questions to cover objectives
- We looked at question
  - Discriminators good
  - Make sure they know the material and can’t guess
  - Looked at each chosen answer
  - Evaluated wrong answers
  - Goal is that smart students got question correct
  - Other students missed

Professional Certifying Exam

Setup so that you have to get the higher level objective questions correct.

Start out with the define, list describe questions in an area such as blood bank or microbiology.

If the participant gets those right it goes to the higher level such as evaluate maybe with a picture or a case study.

Table 1. Mean seminar final examination scores for 2008 students.

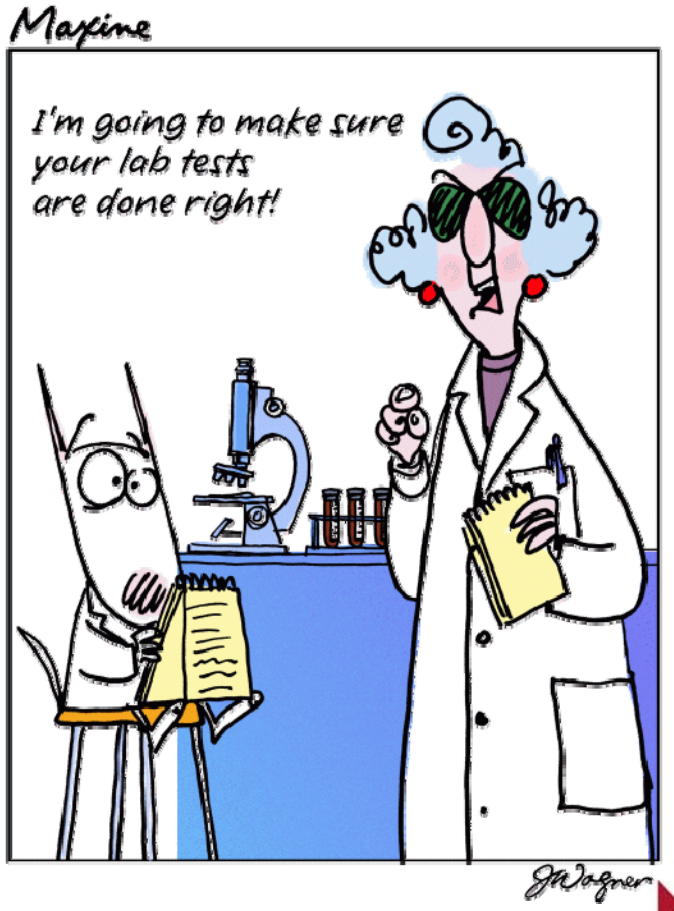
Group	Blood Bank	Chem	Hemat	Immuno	Lab Ops	Micro*	Urine*
On-campus N=27	76.6	82.1	74.8	69.9	82.9	81.2	75.6
Online N=10	75.1	81.7	73.2	73.7	79.5	68.8	65.3

*P<0.05

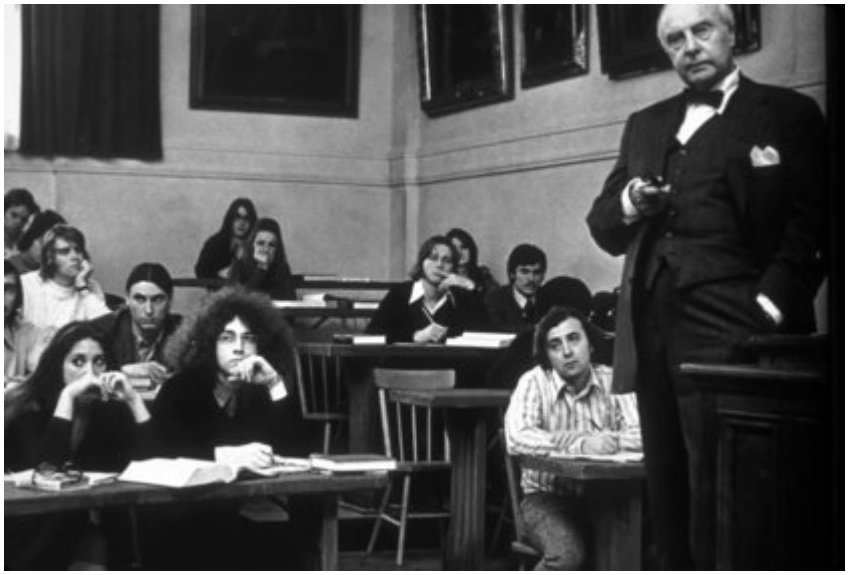
LABORATORY EDUCATION BASED ON BODY OF KNOWLEDGE

PROBLEM-BASED EDUCATION

The field of Medical Laboratory Science (MLS) demands an extensive understanding of challenging, complex information related to the field. Being a successful MLS practitioner, however, necessitates more than simply being aware of or able to recite these facts—it requires the ability to apply them in real-life troubleshooting situations. As a result, a major focus of MLS curricula often includes an emphasis on developing critical thinking skills.




fiscal
Mone
policy



THREE R'S OF EDUCATION

RELEVANCY

RELATIONSHIP

RESPONSIBILITY

TEACHING DEFINITION

PLANNED INTERVENTION WITH INTENT OF FACILITATING A CHANGE IN BEHAVIOR

1. Defining clinical instruction is the differentiation between instruction and learning.
2. Instruction is conducted by teacher
3. Learning is accomplished by the student
4. Teacher cannot assume that mere presentation of the information will result in learning.

INSTRUCTOR'S ROLE IN THE CLINICAL SETTING

SUBJECT MATTER EXPERT

KNOWLEDGE AND SKILL TO FUNCTION IN THE LABORATORY

FACILITATOR

Planning Curriculum

WHAT DO YOU TEACH?

Accrediting agency
Institution
Curriculum committee
Laboratory managers
Students themselves
Grant expectation
Grant Deliverables

Course Goals- broad statements of expected outcomes.

Objectives: specific learning tasks

Activities planned to accomplish the objectives

EVALUATION

Like quality control it is an integral part of every laboratory procedure.

Evaluation is much more than testing and assigning grades. Don't assume that evaluation is something "done to the students"

Assessment of instruction as well as the learning

should be done by both instructor and student

Students need to assess their own learning.

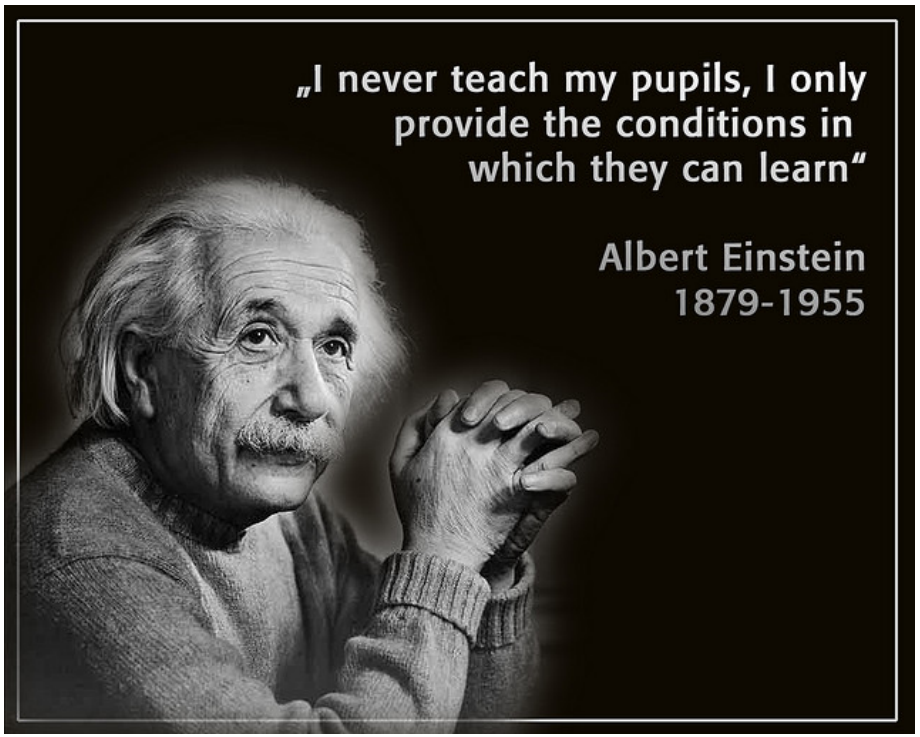
FORMATIVE – conducted during the activity

SUMMATIVE- conducted at the end of the activity

DIDACTIC FORMAT - LECTURE

Over use of Lecture

I Pitch You Catch



Laboratory personnel are trained to perform

Specific analysis

Manual procedures

Sophisticated instrumentation

Basic Science

Specific clinical practices

We are trained to study what can go wrong, why, recognize, and troubleshoot

INSTRUCTIONAL OBJECTIVES

- A STATEMENT THAT DESCRIBES WHAT THE **LEARNER** WILL BE ABLE TO DO AFTER COMPLETING A PRESCRIBED UNIT OF INSTRUCTION.

Resistance against using objectives

For Instructor instructional objectives

Process for clearly conceptualizing content, teaching methodology and evaluation, with a focus on expected outcomes.

Method of communicating ideas and expectations to students and other instructors.

Allow a process for planning sequential development of knowledge, skills and attitude.

Serve as a basis for monitoring the development of competencies.

Contrast between the instructor and the student.

For the Student instructional objectives

Logical frame of reference indicating what will be done and what will be tested.

Clear understanding of what the instructor expects of them.

Opportunity for self-evaluation

4 Elements in developing a Well Written Objective

ABCD

A. Audience - who the objective is written for

B. Behavior – specific action/behavior that must be performed or exhibited. Must be measurable

C. Conditions - relevant factors

D. Degree – Level of achievement

Audience

Learner
Student
Participant
Safety officer

BEHAVIOR

KNOWLEDGE	APPLICATION	PROBLEM SOLVING
Watch	Record	Adjust
Imitate	Operate	Master
Observe	Locate	Perfect
Attend	Demonstrate	Design
View	Practice	Experiment
Return	Draw	Correlate
Demonstrate	Employ	
	Illustrate	
	Measure	
	Perform	
	Use	
	Set Up	

CONDITION

CLASSROOM
LABORATORY
AFTER REVIEWING INSTRUCTIONS
UPON COMPLETION OF THE ASSIGNMENT
WITH USE OF NOTES
WHEN PROVIDED WITH EQUIPMENT
GIVEN A CASE STUDY
CLINICAL PROBLEM
ON A MODEL OR CLASSMATE

DEGREE (this is used for evaluation)

TO A DEGREE OF ACCURACY
TO STATE PURPOSE SUCH AS WITHIN 2 STANDARD DEVIATIONS
WITHIN A TIME PERIOD
WITH A FIVEN NUMBER OF TRIALS
TO BE VERIFIED BY A PERSON, PANEL OR EXTERNAL AGENCY
IN COMPLIANCE WITH THE CRITERIA ESTABLISHED BY CLSI.

Minimum number
Percent or proportion
Features of a successful performance

PRACTICE

- FOLLOWING A DISCUSSION ON INSTRUCTIONAL OBJECTIVES, THE STUDENT WILL BE ABLE TO APPRECIATE THEIR USE.

WRITE AN OBJECTIVE WITH THE 4 ELEMENTS FOR REMOVAL OF GLOVES IN THE LABORATORY

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DOMAINS OF LEARNING

WELL WRITTEN OBJECTIVES INDICATE WHETHER DESIRED STUDENT LEARNING WILL BE INFORMATION, SKILLS OR ATTITUDE.

COGNITIVE
PHSYCOMOTOR
AFFECTIVE

COGNATIVE – KNOWLEDGE OR KNOW ABOUT

PSYCHOMOTOR - DO IT? - SKILL

AFFECTIVE – How do I feel about it? ATTITUDE

Objectives are further broken down into levels of learning.

These are called taxonomies or hierarchies of learning in education literature.

Levels proceed from simple to complex.

Levels of learning help in the learning process and in development of sequential curriculum.

BLOOMS TAXONOMY EXTENSIVE AND SPECIFIC TAXONOMIES

LEARNING DOMAINS

3 – KNOWLEDGE, APPLICATION, PROBLEM SOLVING

6 – KNOWLEDGE, COMPREHENSION, APPLICATION, ANALYSIS, SYNTHESIS, AND EVALUATION

PSYCOMOTOR DOMAIN

KNOWLEDGE - PERCEPTIONS, READINESS

APPLICATION - GUIDED RESPONSE, MECHANISM, COMPLEX OVERT RESPONSE

PROBLEM SOLVING – ADAPTATION, ORIGINATION

T.A.S.K. A.C.T.

Take a look – Select a skill – give it a title. Identify who will be trained in the skill. State purpose for learning the skill.

Arrange the steps- observe someone performing the skill and record everything the person does. Divide skill into major steps.

Sentences - Write each major skill step in short, precise, specific sentences that describe exactly what is done.

Key information – Write the key information or knowledge that is needed to perform each major step correctly. Include safety and health precautions and other reminders.

Application – Point out specific actions that should be present in the performance of the skill that are necessary for better patient care.

Check-Review and revise the skill analysis by again observing the skill being performed.

Try it out- Give the skill analysis to someone to follow as instructions for the performance of the skill. Ask for suggestions.

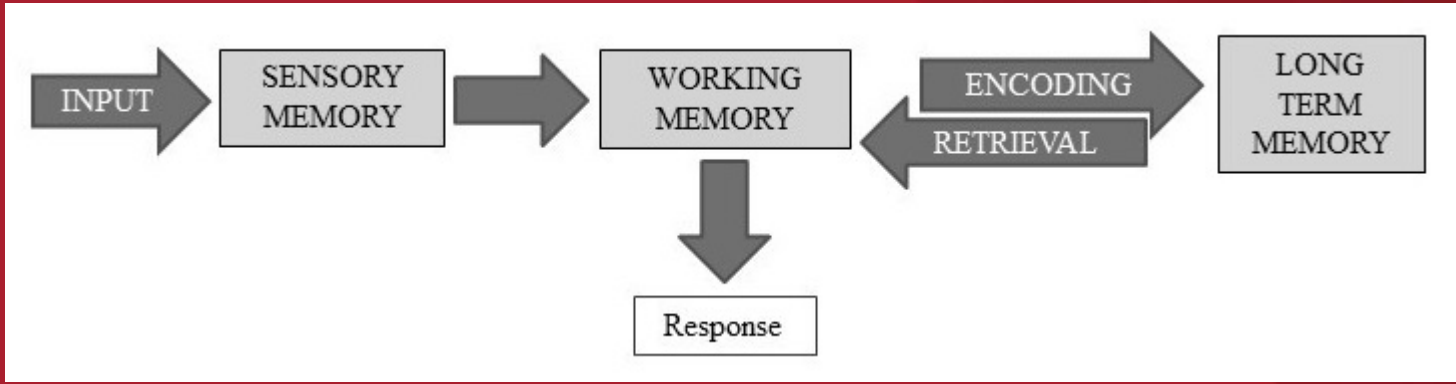
PREVIOUS EDUCATION WAS FOCUSED ON ACCUMULATION OF KNOWLEDGE

CURRENT PRACTITIONERS NEED TO HAVE

good communication skills

find the information they need to solve problems

ability to continue to learn



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Instructional Goals

DEFINED AS GENERAL STATEMENTS THAT PRESCRIBE THE MAJOR PURPOSES OF THE PROGRAM, COURSE OR UNIT OF INSTRUCTION.

The medical laboratory science student will be able to:
Design a quality control program for the clinical chemistry section.

After completing the reading assignments and worksheets the student will be able to:

State the 3 items that a quality control sample evaluates for the Siemens chemistry analyzer.

Combination of Degrees

Given the 5 photographs accompanied by a case history depicting a microbiology sample received, the medical laboratory science student will:

1) Describe the morphology of the colony.
2) Record the results on the laboratory worksheet.
3) Set up the next test to identify the organism.
4) Identify the organism matching the answer of the instructor.

Cognitive is

Psychomotor is

Affective is

1. Select a presentation topic
2. Write educational objectives for the cognitive domain
3. Write educational objectives for the psychomotor domain
4. Write educational objectives for the affective domain
5. Prepare a content outline for a presentation
6. Write level 1 multiple choice test questions (recall)
7. Write level 2 multiple choice test questions (application)
8. Write level 3 multiple choice test questions (problem-solving)
9. Select and use appropriate, recent references to prepare a presentation
10. Prepare handout materials for an oral presentation
11. Prepare an oral presentation
12. Prepare graphics and visual aids for a presentation
13. Select appropriate audio/visual equipment for a presentation
14. Use audio/visual equipment effectively
15. Consult with peers to improve educational materials

EVALUATION

MEASUREMENT –of student proficiency . Must achieve 80% or above?

Judgement – based on measurement. The evaluator can make a judgment in the light of some pre-established standards.

Norm-Referenced- Comparison with peer group, performance of other students. Evaluation is relative to performance of others.

Criterion-Referenced – comparison with some pre-established standard. In this type of evaluation, it matters not how the other students perform or even if there are other students. The absolute criteria has already been set.

Formative – periodic assessment of behavior to provide feedback to the learner during the teaching/learning process.

Summative – terminal assessment of performance at end of the educational unit.

EVALUATION
to measure outcomes

Coaching

Reading USA is ranked #15

SCIENCE in USA is #23

Math in USA is #32

HANDS ON EXPERIENCES

Minopro camera and tripod

Education

MASTERY

Based Learning

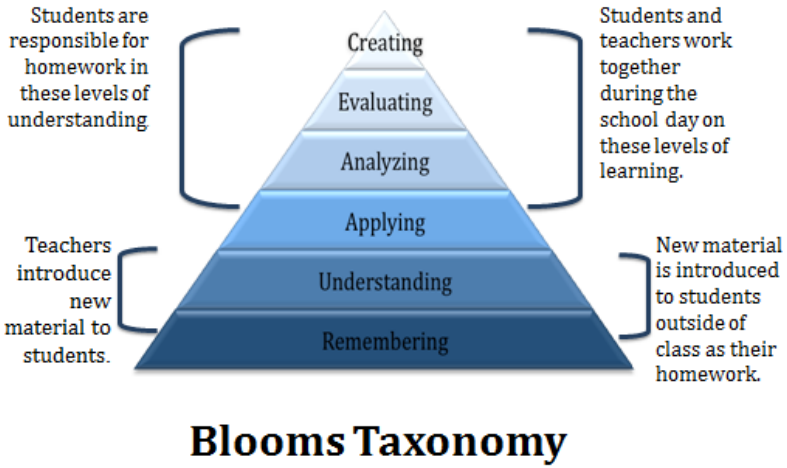
MINDSET

Grit and perseverance

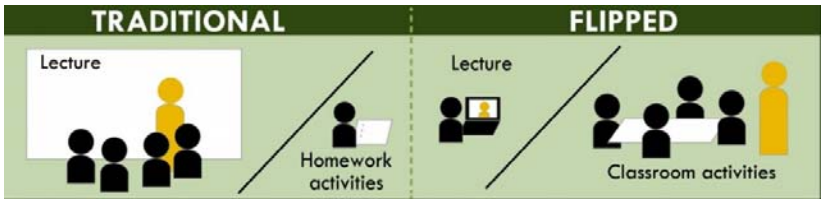
AEROSOLS

Flipped Classroom

Traditional Model **Flipped Model**



Blooms Taxonomy



SPARKS EDUCATION

INTERACTIVE VIDEOS.

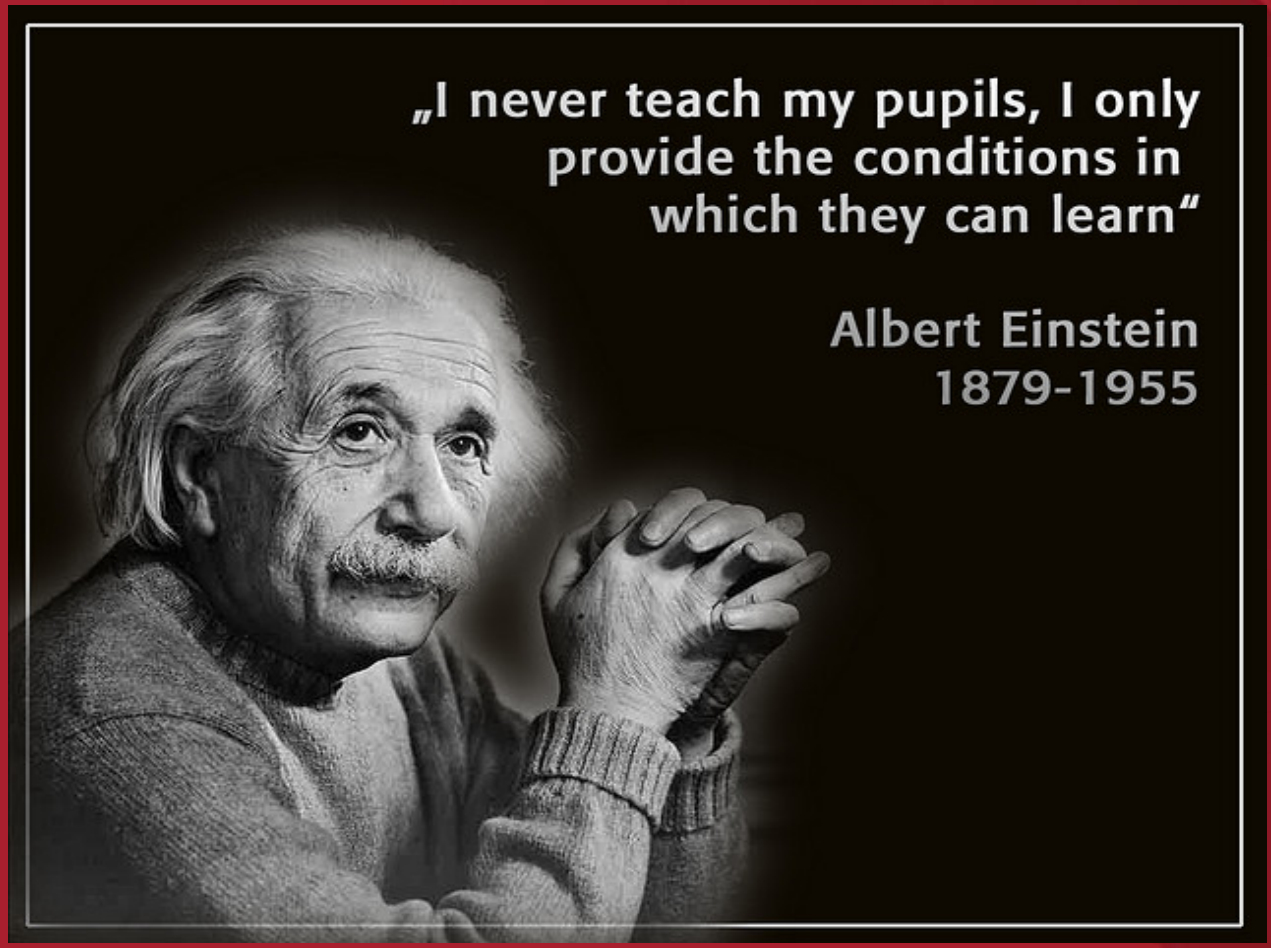
EVALUATION OF SITUATION THAT SHOWS LAPSE IN BIOSAFETY.

CRITICAL AND CREATIVE THINKING.

IN DEPTH DISSCUSSION.

SOLVE REAL WORLD PROBLEMS.

SOLVE REAL LABORTORY SAFETY SITUATIONS.



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