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Center for Higher Education Research and Accreditation

**Room 803, 8 Nguyen Van Trang, Ben Thanh Ward, District 1,
Ho Chi Minh City**

Tel: 028.7309.1991

Ext: 11.320, 11.323, 11.324, 11.325

WRITING LEARNING OBJECTIVES USING BLOOM'S TAXONOMY

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1. What Are Learning Objectives?

Learning objectives are statements that define the expected goal of a curriculum, course, lesson or activity in terms of demonstrable skills or knowledge that will be acquired by a student as a result of instruction. They are also known as instructional objectives.

1. What Are Learning Objectives?

In education, learning objectives are brief statements that describe what students will be expected to learn by the end of school year, course, unit, lesson, project, or class period.

* *Why Using Learning Objectives?*

- To define learning outcomes and focus teaching;
- To help clarify, organize and prioritize learning;
- To help you and your students evaluate progress and encourage them to take responsibility for their learning;
- To help you ensure that your tasks and activities are appropriate and will help your students achieve their objectives; and
- To allow you to articulate your expectations for your students, which can inform you as you write lesson plans, test, quizzes, and assignment sheets.

2. What Is Bloom's Taxonomy?

A classification of the different objectives that educators set for students (learning objectives).

2.1. Why Using Bloom's Taxonomy?

A powerful tool to help develop learning objectives

Why?

It explains the process of learning:

- Before you can ***understand*** a concept, you must ***remember*** it.
- To ***apply*** a concept you must first ***understand*** it.
- In order to ***evaluate*** a process, you must have ***analyzed*** it.
- To ***create*** an accurate conclusion, you must have completed a thorough ***evaluation***.

Three Domains of Learning

- Cognitive Domain

- *"Thinking"*

- Affective Domain

- *"Feeling"*

- Psychomotor Domain

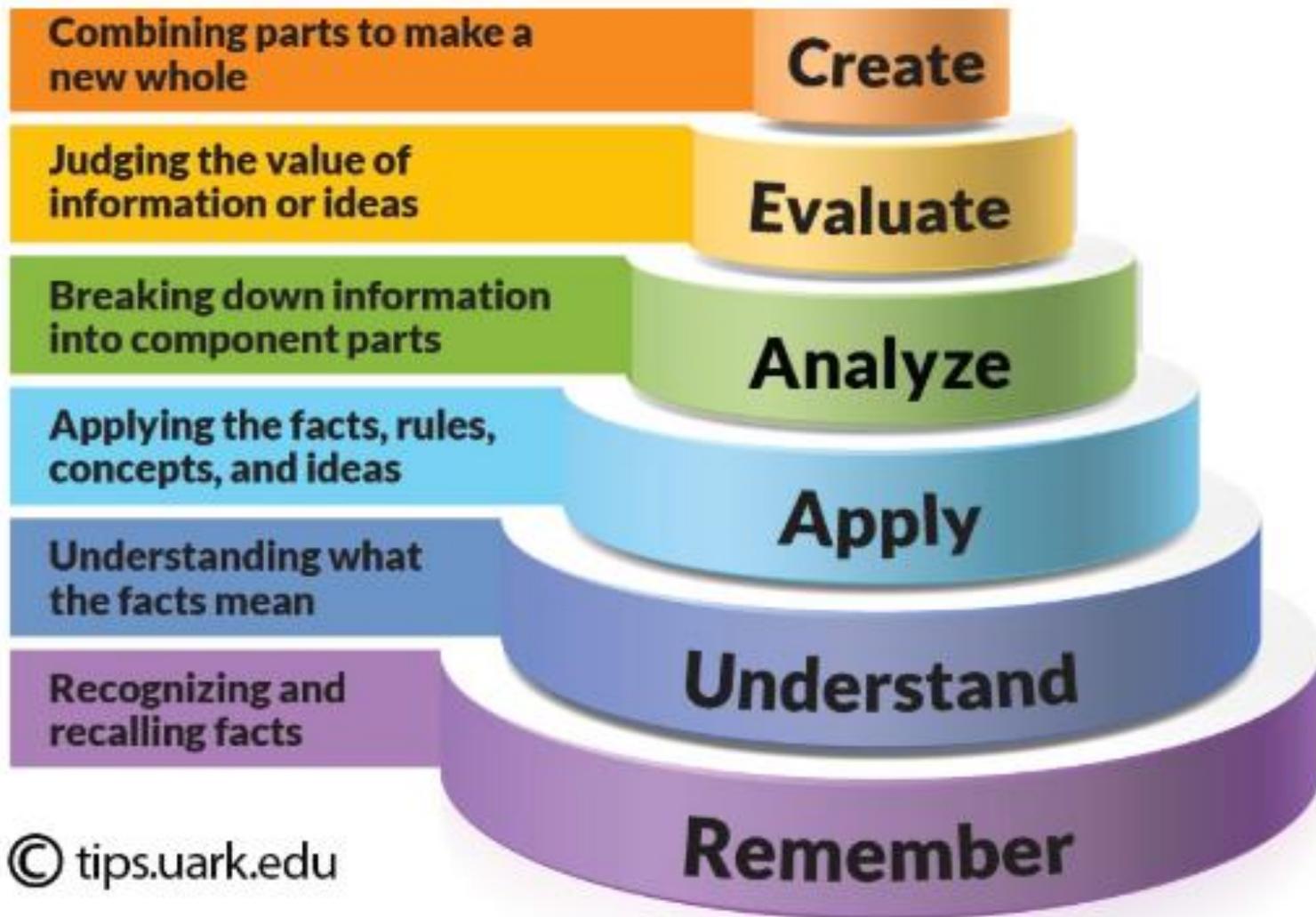
- *"Doing"*

2.2.1. The Cognitive Domain

- The cognitive domain deals with how we acquire, process, and use knowledge. It is the "thinking" domain.
- The cognitive domain focuses on ways an individual acquires and uses knowledge, categorized by simple recall of material through more complex and abstract behaviors.

* *Why Using the Cognitive Domain?*

To help educators develop critical thinking and higher order cognitive abilities in students



Bloom's Level	Key Verbs (keywords)	Example Learning Objective
Create	design, formulate, build, invent, create, compose, generate, derive, modify, develop.	<i>By the end of this lesson, the student will be able to design an original homework problem dealing with the principle of conservation of energy.</i>
Evaluate	choose, support, relate, determine, defend, judge, grade, compare, contrast, argue, justify, support, convince, select, evaluate.	By the end of this lesson, the student will be able to determine whether using conservation of energy or conservation of momentum would be more appropriate for solving a dynamics problem.
Analyze	classify, break down, categorize, analyze, diagram, illustrate, criticize, simplify, associate.	<i>By the end of this lesson, the student will be able to differentiate between potential and kinetic energy.</i>

Apply	calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, perform, present.	<i>By the end of this lesson, the student will be able to calculate the kinetic energy of a projectile.</i>
Understand	describe, explain, paraphrase, restate, give original examples of, summarize, contrast, interpret, discuss.	<i>By the end of this lesson, the student will be able to describe Newton's three laws of motion to in her/his own words</i>
Remember	list, recite, outline, define, name, match, quote, recall, identify, label, recognize.	<i>By the end of this lesson, the student will be able to recite Newton's three laws of motion.</i>

** Examples of Questions for Each Level*

• Remember

- Who? What? Where? When? How?
- Describe:_____.
- What is _____?

• Understand

- Re-tell _____ in your own words.
- What is the main idea of _____?
- What differences exist between _____ and _____?
- Write a brief outline.

** Examples of Questions for Each Level*

- **Apply**

- How is _____ an example of _____?
- How is _____ related to _____?
- Why is _____ significant?
- Describe an example of when _____ happens.

- **Analyze**

- What are the parts of _____?
- Classify this according to _____.
- Create an outline/concept map of _____.
- Provide evidence that _____ is correct.

** Examples of Questions for Each Level*

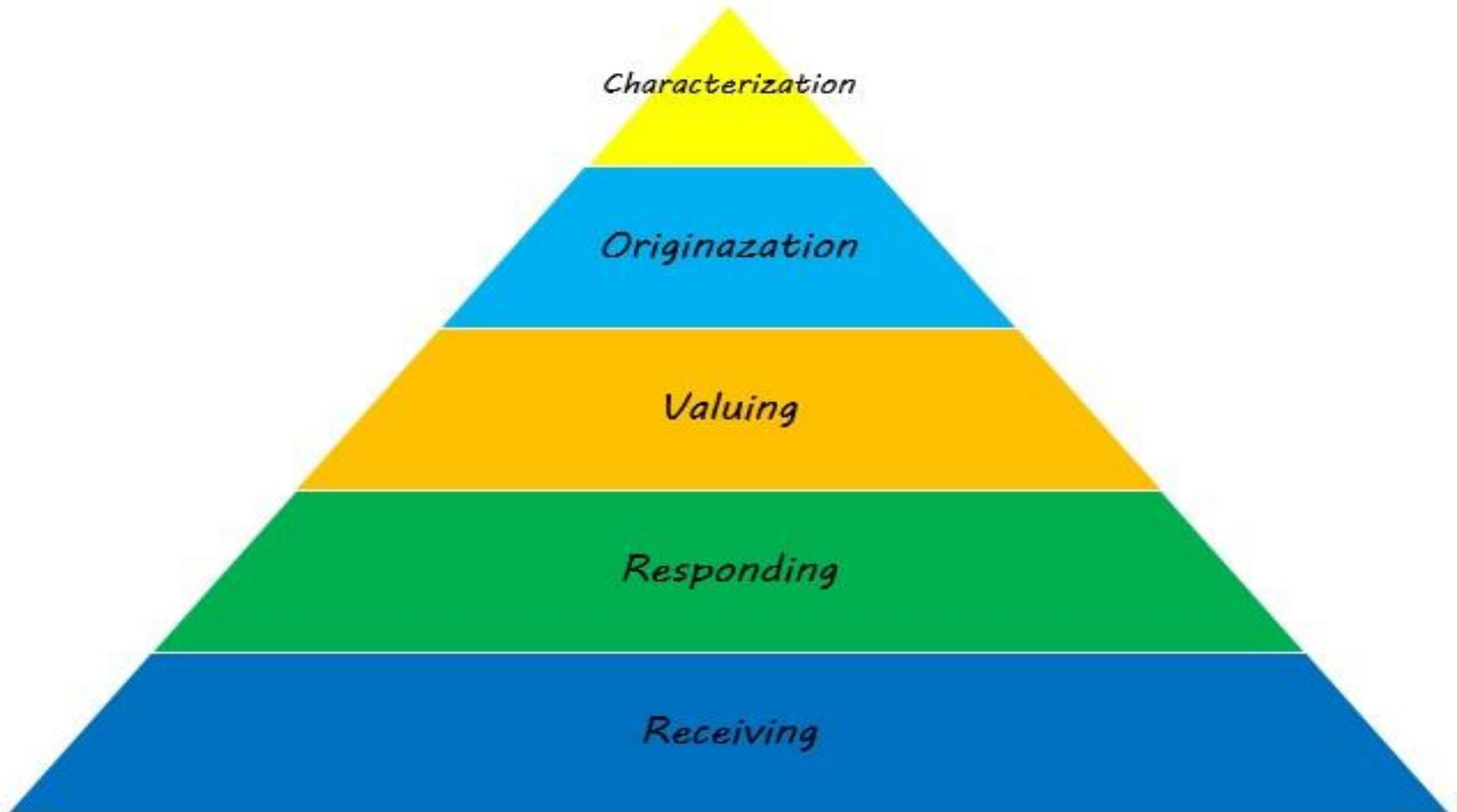
- **Evaluate**

- Compare and contrast _____ to _____.
- Select the best product.
- Critique the play.
- Judge the following in these merits: _____.

- **Create**

- Organize the following: _____.
- Predict what will happen next.
- What solutions would you suggest for _____?
- How would you design a new _____?

2.2.2. *The Affective Domain*

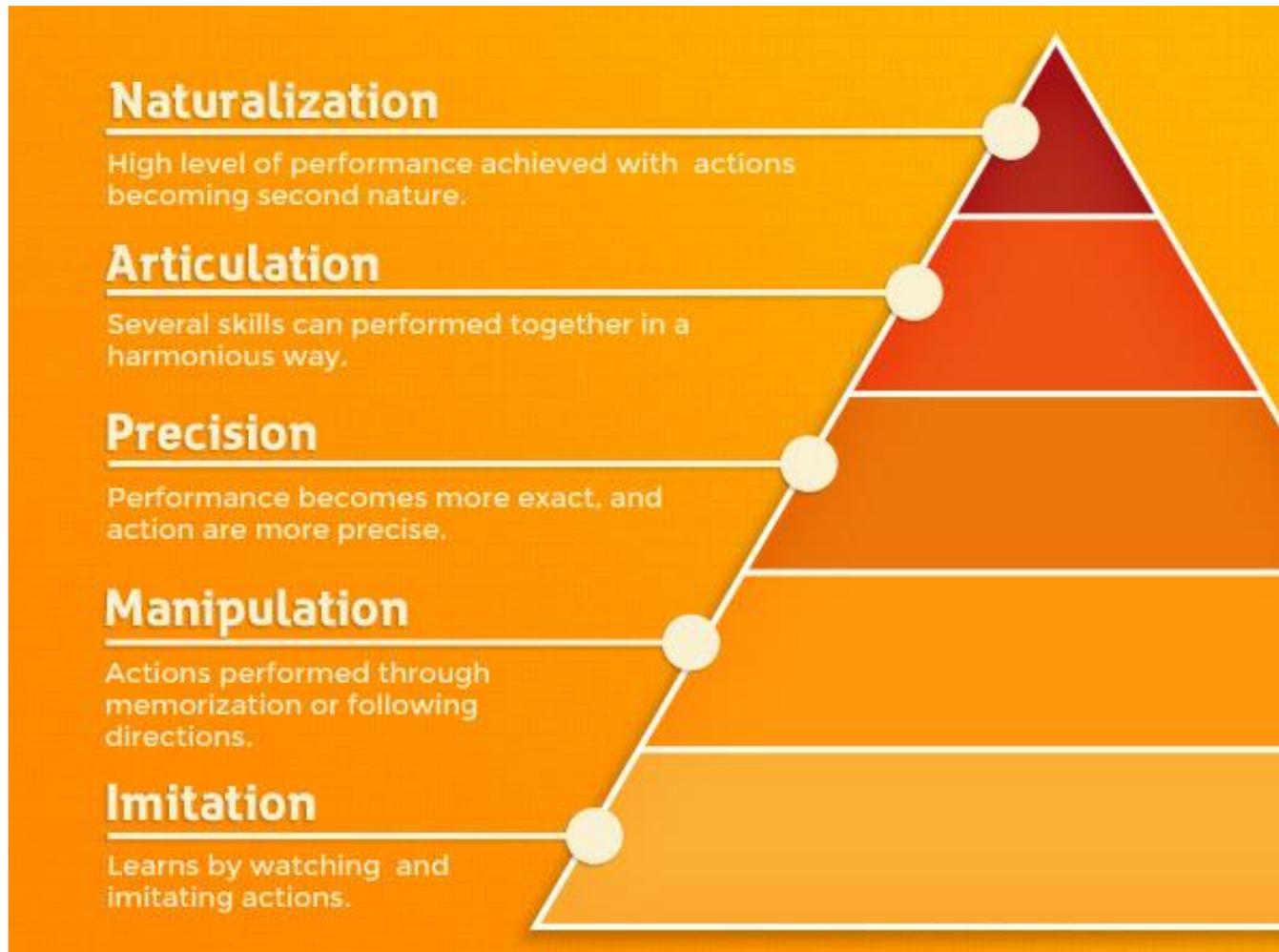


2.2.2. *The Affective Domain*

- *The affective domain deals with our attitudes, values, and emotions. It is the "valuing" domain.*
- *In other words, the affective domain involves students' interests, values, and attitudes moving from low levels of awareness towards internalization.*

Category	Example Verbs	Definition	Example
Receiving	asks, chooses, describes, follows, identifies, locates, names, selects, replies	Awareness and willingness to listen	Student will listen to a discussion of ethics pertaining to a recent engineering failure.
Responding	answers, assists, complies, conforms, discusses, presents, recites, reports, writes	Actively attends by participating in some manner	Student will show an interest in ethical issues by participating in class discussions.
Valuing	completes, describes, differentiates, explains, follows, forms, initiates, invites, joins, justifies, proposes, reads, reports, selects, shares, studies	Expresses worth or value attached to an event, object, or behavior	Student will show concern for the safety of others when developing a new design.
Organization	adheres, combines, compares, completes, defends, explains, generalizes, integrates, modifies, orders, organizes, prepares, relates, synthesizes	Bringing together different values, resolving conflicts and beginning the building of an internally consistent value system	Given a hypothetical case study, students will be able to defend or argue the actions of a company by comparing them to expected behaviors listed in a professional code of ethics.
Characterization	acts, discriminates, displays, influences, listens, modifies, performs, practices, proposes, qualifies, questions, revises, serves, solves, uses, verifies	Creation of value system that becomes a lifestyle	Individual will show a commitment to a professional code of ethics during daily work.

2.2.3. *The Psychomotor Domain*



2.2.3. *The Psychomotor Domain*

- *The psychomotor domain deals with manual or physical skills. It is the "doing" domain.*
- *It includes physical movement, coordination, and use of the motor-skill areas.*

* Action verbs

- **Imitation:** adhere, copy, follow, mimic, repeat, replicate, reproduce, trace
- **Manipulation:** act, build, execute, implement, perform, recreate
- **Precision:** calibrate, complete, control, demonstrate, execute, master, perfect, perform, show
- **Articulation:** adapt, combine, construct, coordinate, create, develop, integrate, modify
- **Naturalization:** design, develop, invent, specify

3. How to Write Learning Objectives?

3.1. Learning objectives should specify four main things:

3.1.1. Audience

- Who? Who is this aimed at?

3.1.2. Behavior

- What? What do you expect them to be able to do? This should be an overt, observable behavior, even if the actual behavior is covert or mental in nature. If you can't see it, hear it, touch it, taste it, or smell it, you can't be sure your audience really learned it.

3. How to Write Learning Objectives?

3.1. Learning objectives should specify four main things:

3.1.3. Condition

- How? Under what circumstances will the learning occur? What will the student be given or already be expected to know to accomplish the learning?

3.1.4. Degree

- How much? Must a specific set of criteria be met? Do you want total mastery (100%), do you want them to respond correctly 80% of the time, etc. A common (and totally non-scientific) setting is 80% of the time.

• This is often called the ABCD's of objectives, a nice mnemonic aid!

3. How to Write Learning Objectives?

3.2. Learning objectives should be **SMART**:

3.2.1. **Specific**

- Use the ABCDs to create a clear and concise objective.

3.2.2. **Measurable**

- Write the objective so that anyone can observe the learner perform desired action and objectively assess the performance.

3.2.3. **Achievable**

- Make sure the learner can do what is required. Don't, for example, ask the learner to perform complex actions if they are a beginner in an area.

3. How to Write Learning Objectives?

3.2. Learning objectives should be **SMART**:

3.2.4. *Relevant*

- Demonstrate value to the learner. Don't teach material that won't be used or on which you will not assess.

3.2.5. *Timely and Time Bound*

- Ensure the performance will be used soon, not a year from now. Also, include any necessary time constraints, such as completing a task in "10 minutes or less."

3. How to Write Learning Objectives?

Examples of Measurable Action Words (examples)

Explain	Demonstrate	Analyze	Formulate	Discuss
Compare	Differentiate	Describe	Name	Assess
Evaluate	Identify	Design	Define	List

3. How to Write Learning Objectives?

3.3. Learning objectives should be framed or expressed with some common statements

3.3.1. Descriptive statements:

Brief statements describing what students should know or be able to do by the end of a defined instructional period.

Ex: *Explain how ...*

3. How to Write Learning Objectives?

3.3. Learning objectives should be framed or expressed with some common statements

3.3.2. "I can" statements:

Encourage students to identify with the learning goals, visualize themselves achieving the goals, or experience a greater sense of personal accomplishment when the learning objectives are achieved

Ex: I can explain how

3. How to Write Learning Objectives?

3.3. Learning objectives should be framed or expressed with some common statements

3.3.3. Stem statements:

Commonly used format for learning objectives

Ex: After this course, students will be able to explain how.....

After completing this lesson, students are expected to be able to identify three farm animals.

By midterm, all students should be able to count to 20.

3. How to Write Learning

Objectives?

3.4. *Familiarize yourself with Bloom's taxonomy*

3.4.1. *Three domains of learning*

3.4.2. *Using action verbs*

Focusing on concrete actions and behaviors allows us to make student learning explicit, and communicates to students the kind of intellectual effort we expect of them.

➔ Using action verbs enables you to more easily measure the degree to which students can do what you expect them to do.

4. LEARNING OBJECTIVES SAMPLES



4. Learning Objectives Samples

4.1. *Learning objectives that span a range levels of learning as described by Bloom's taxonomy*

By the end of this course, students will be able to:

- predict the appearance and motion of visible celestial objects;
- formulate scientific questions about the motion of visible celestial objects;
- plan ways to model and/or simulate an answer to the questions chosen;
- select and integrate information from various sources, including electronic and print resources, community resources, and personally collected data, to answer the questions chosen;

4. Learning Objectives Samples

4.1. *Learning objectives that span a range levels of learning as described by Bloom's taxonomy*

- communicate scientific ideas, procedures, results, and conclusions using appropriate SI units, language, and formats;
- describe, evaluate, and communicate the impact of research and other accomplishments in space technology on our understanding of scientific theories and principles and on other fields of endeavor.

[Adapted from

<http://batchwood.herts.sch.uk/files/Learning-Objectives.pdf>]

4. Learning Objectives Samples

4.2. *Learning objectives can address content*

- By the end of this course, students will be able to categorize macroeconomic policies according to the economic theories from which they emerge.
- By the end of this unit, students will be able to describe the characteristics of the three main types of geologic faults (dip-slip, transform, and oblique) and explain the different types of motion associated with each.

[Adapted from

<http://batchwood.herts.sch.uk/files/Learning-Objectives.pdf>]

4. Learning Objectives Samples

4.3. *Learning objectives can address skills*

- By the end of this course, students will be able to ask questions concerning language usage with confidence and seek effective help from reference sources.
- By the end of this course, students will be able to analyze qualitative and quantitative data, and explain how evidence gathered supports or refutes an initial hypothesis.

[Adapted from

<http://batchwood.herts.sch.uk/files/Learning-Objectives.pdf>]

4. Learning Objectives Samples

4.4. *Learning objectives can address values*

- By the end of this course, students will be able to work cooperatively in a small group environment.
- By the end of this course, students will be able to identify their own position on the political spectrum.

[Adapted from

<http://batchwood.herts.sch.uk/files/Learning-Objectives.pdf>]

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