Bloom's Taxonomy of Educational Objectives and Writing Intended Learning Outcomes Statements

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PREFACE

This handbook describes Bloom's Taxonomy of Educational Objectives and contains guidelines for writing intended student learning outcomes for business programs.

The handbook is organized into the following sections:

- **Introduction**: This section summarizes the initial development of Bloom's classification framework for educational goals and objectives.
- **The Original Taxonomy of the Cognitive Domain**: This section describes Bloom's 1956 original taxonomy of educational objectives in the cognitive domain along with sample verbs for use in writing intended learning outcomes for each cognitive level of learning.
- **The Revised Bloom's Taxonomy**: This section describes the 2001 revision of the taxonomy along with sample verbs for use in writing intended learning outcomes for each cognitive level in the revised taxonomy.
- **Why Use Bloom's Taxonomy?**: This section provides several reasons for using Bloom's Taxonomy of Educational Objectives in guiding teaching and learning.
- **Writing Intended Student Learning Outcomes Statements**: This section contains guidelines for writing clear and effective statements of intended student learning outcomes.

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INTRODUCTION

In 1956, Benjamin Bloom along with a group of like-minded educators developed a framework for classifying educational goals and objectives into a hierarchical structure representing different forms and levels of learning. This framework was published as Bloom's Taxonomy of Educational Objectives and consisted of the following three domains:

- **The Cognitive Domain** – knowledge-based domain, consisting of six levels, encompassing intellectual or thinking skills
- **The Affective Domain** – attitudinal-based domain, consisting of five levels, encompassing attitudes and values
- **The Psychomotor Domain** – skills-based domain, consisting of six levels, encompassing physical skills or the performance of actions

Each of these three domains consists of a multi-tiered, hierarchical structure for classifying learning according to increasing levels of complexity. In this hierarchical framework, each level of learning is a prerequisite for the next level, i.e., mastery of a given level of learning requires mastery of the previous levels. Consequently, the taxonomy naturally leads to classifications of lower- and higher-order learning.

In higher education, the cognitive domain has been the principal focus for developing educational goals and objectives while the affective and psychomotor domains have received less attention. Bloom's taxonomy has stood the test of time, has been used by generations of curriculum planners and college and university professors, and has become the standard for developing frameworks for learning, teaching, and assessment.

THE ORIGINAL TAXONOMY OF THE COGNITIVE DOMAIN

Bloom's original 1956 Taxonomy of Educational Objectives identified the following levels of cognitive learning (arranged from lower-order to higher-order levels of learning):

- **Knowledge** – The remembering of previously learned material; this involves the recall of a wide range of material, from specific facts to complete theories.
- **Comprehension** – The ability to grasp the meaning of previously-learned material; this may be demonstrated by translating material from one form to another, interpreting material (explaining or summarizing), or by predicting consequences or effects.
- **Application** – The ability to use learned material in new and concrete situations; this may include the application of rules, methods, concepts, principles, laws, and theories.
- **Analysis** – The ability to break down material into its component parts so that its organizational structure may be understood; this may include the identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved.
- **Synthesis** – The ability to put parts together to form a new whole; this may involve the production of a unique communication (thesis or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information).

- **Evaluation** – The ability to judge the value of material for a given purpose; the judgments are to be based on definite internal and/or external criteria.

For each level in each domain, Bloom identified a list of suitable verbs for describing that level in written objectives. For each level in the cognitive domain, the following table provides a list of sample verbs to use in writing intended student learning outcomes that are appropriate for that cognitive level of learning. In the table, the learning levels are arranged from lower-order learning to higher-order learning.

Bloom's Original Taxonomy of the Cognitive Domain					
Cognitive Level	**Sample Verbs to Use in Writing Intended Student Learning Outcomes**				
Knowledge	Acquire Choose Count Define Distinguish Fill-in	Find Group Identify Indicate Label List	Locate Match Memorize Name Outline Point	Quote Recall Recite Recognize Record Repeat	Reproduce Select State Tabulate Trace Underline
Comprehension	Associate Change Classify Conclude Compare Contrast Convert Demonstrate Describe Determine	Define Differentiate Discuss Distinguish Estimate Expand Explain Express Extend Extrapolate	Fill in Find Generalize Give examples Group Infer Illustrate Interpolate Interpret Measure	Outline Paraphrase Predict Prepare Put in order Rearrange Recognize Reorder Reorganize Represent	Retell Reword Rewrite Restate Show Simplify Suggest Summarize Transform Translate
Application	Apply Calculate Choose Classify Collect information Compute Construct Convert Differentiate Demonstrate Derive	Determine Develop Discover Discuss Distinguish Employ Estimate Examine Expand Experiment Express in a discussion	Generalize Graph Illustrate Interpret Interview Investigate Locate Make Manipulate Model Modify Operate	Organize Participate Perform Plan Practice Predict Prepare Present Produce Prove Put into action Put to use	Put together Record Relate Restructure Select Show Solve Track Transfer Translate Use Utilize
Analysis	Analyze Categorize Classify Compare Contrast Criticize Debate Deduce	Detect Determine Diagram Differentiate Discover Discriminate Distinguish Divide	Draw conclusions Examine Formulate Generalize Group Identify (parts) Illustrate	Infer Inspect Order Outline Point out Recognize Relate Search	Select Separate Simplify Sort Subdivide Take apart Transform Uncover

Bloom's Original Taxonomy of the Cognitive Domain					
Cognitive Level	**Sample Verbs to Use in Writing Intended Student Learning Outcomes**				
Synthesis	Arrange Blend Build Categorize Combine Compile Compose Constitute Construct Create	Deduce Derive Design Devise Develop Document Explain Form Formulate Generalize	Generate Imagine Integrate Invent Make up Modify Originate Organize Perform Plan	Predict Prepare Prescribe Present (an original work) Produce Propose Rearrange Reconstruct Relate	Reorganize Revise Rewrite Specify Suppose Summarize Synthesize Tell Transmit Write
Evaluation	Appraise Argue Assess Award Choose Compare Conclude	Consider Contrast Criticize Critique Decide Defend Describe	Determine Discriminate Distinguish Evaluate Grade Interpret Judge	Justify Measure Rank Rate Recommend Relate Score	Select Standardize Summarize Support Test Validate Verify

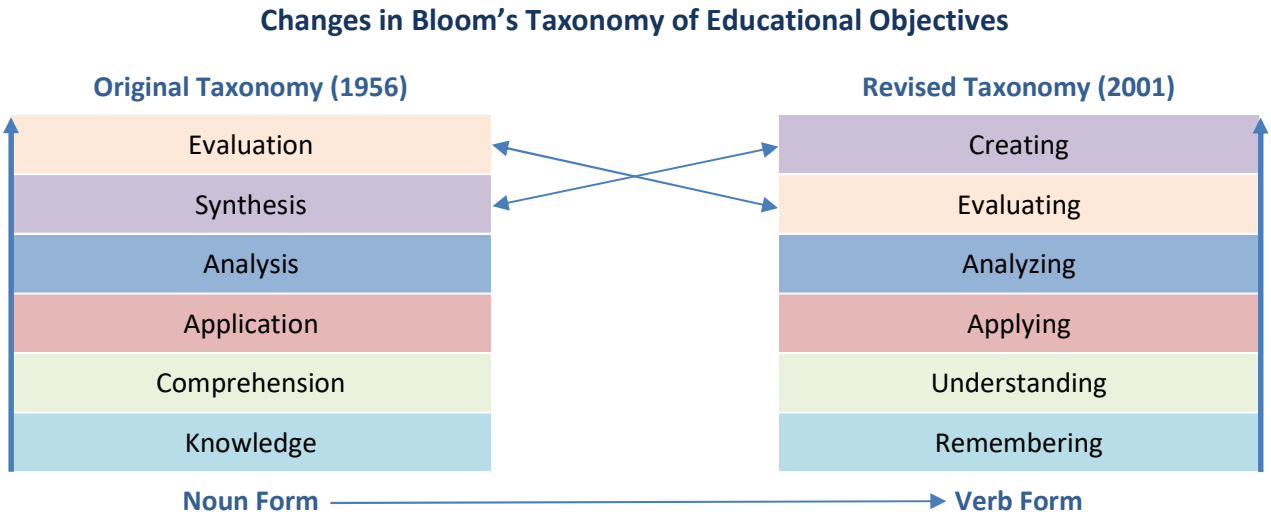
THE REVISED BLOOM'S TAXONOMY

In 2001, a former student of Bloom's, Lorin Anderson, and a group of cognitive psychologists, curriculum theorists and instructional researchers, and testing and assessment specialists published a revision of Bloom's Taxonomy entitled A Taxonomy for Teaching, Learning, and Assessment. The revision updates the taxonomy for the 21st century, and includes significant changes in terminology and structure. In the revised framework, 'action words' or verbs, instead of nouns, are used to label the six cognitive levels, three of the cognitive levels are renamed, and the top two higher-order cognitive levels are interchanged. The result is a more dynamic model for classifying the intellectual processes used by learners in acquiring and using knowledge.

The revised taxonomy identifies the following new levels of cognitive learning (arranged from lower-order to higher-order levels of learning):

- **Remembering** – Retrieving, recognizing, and recalling relevant knowledge from long-term memory
- **Understanding** – Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining
- **Applying** – Using information in new ways; carrying out or using a procedure or process through executing or implementing
- **Analyzing** – Breaking material into constituent parts; determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing
- **Evaluating** – Making judgments based on criteria and standards through checking and critiquing; defending concepts and ideas
- **Creating** – Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing

The graphic below illustrates the differences between Bloom's original taxonomy and the 2011 revised taxonomy:



As was the case in the original taxonomy, we can identify a list of suitable verbs for describing the new cognitive levels in written objectives. For each new cognitive level in the revised taxonomy, the following table provides a list of sample verbs to use in writing intended student learning outcomes that are appropriate for that cognitive level of learning. In the table, the learning levels are arranged from lower-order learning to higher-order learning.

Revised Bloom's Taxonomy of the Cognitive Domain					
Cognitive Level	**Sample Verbs to Use in Writing Intended Student Learning Outcomes**				
Remembering	Articulate Define	Duplicate Identify	List Name	Recall Recognize	Reproduce Tell
Understanding	Calculate Categorize Clarify Classify Compare	Conclude Contrast Describe Discuss Distinguish	Exemplify Expand Explain Illustrate Infer	Interpret Locate Match Outline Paraphrase	Predict Report Restate Summarize Translate
Applying	Carry out Classify	Demonstrate Execute	Illustrate Implement	Practice Solve	Use Utilize
Analyzing	Appraise Attribute Compare Contrast	Deconstruct Detect Differentiate Discriminate	Distinguish Examine Formulate Infer	Integrate Organize Parse Relate	Select Sequence Structure Test
Evaluating	Appraise Check Coordinate	Critique Defend Detect	Dispute Judge Monitor	Prioritize Rate Reconstruct	Select Support Verify
Creating	Change Combine Compile	Compose Construct Create	Design Formulate Generate	Hypothesize Improve Invent	Plan Predict Produce

WHY USE BLOOM'S TAXONOMY?

The answer to this question is multi-faceted and lies in the fact that Bloom's framework provided one of the first systematic and easy-to-understand classifications of thinking and learning. Bloom's Taxonomy provides a clear and robust tool for guiding the development of teaching and learning.

Some of the reasons for employing Bloom's Taxonomy include:

- ❑ Accurately measuring students' abilities requires an understanding of the different levels of cognition that are critical for learning.
- ❑ Developing intended student learning outcomes according to Bloom's Taxonomy helps students understand what is expected of them.
- ❑ Using Bloom's Taxonomy to develop intended student learning outcomes helps professors to plan and deliver appropriate instruction.
- ❑ Developing intended student learning outcomes using Bloom's Taxonomy helps faculty to design and implement appropriate assessment tasks, measures, and instruments.
- ❑ Having intended student learning outcomes based on Bloom's Taxonomy helps to ensure that instruction and assessment are appropriately aligned with the intended outcomes.

WRITING INTENDED STUDENT LEARNING OUTCOMES STATEMENTS

Intended student learning outcomes are statements that describe the desired learning that students should have acquired and should be able to demonstrate at the end of a program of study. They identify what students should know and be able to do as a result of completing their particular degree programs. Consequently, statements of intended learning outcomes should clearly articulate the intended knowledge, skills, abilities, and competencies that characterize the essential learning required of a graduate of a program of study.

How to Write Intended Student Learning Outcomes

Statements of intended student learning outcomes specify both an observable action on the part of the student and the object of that action. In addition, they also may include criteria for acceptable performance and/or other modifiers of the action or object of the action.

Consequently, in writing intended student learning outcomes, it may be useful to begin each learning outcome statement with "Students will be able to...," followed by an appropriate verb relating to the desired action or performance associated with the intended cognitive level (e.g., using Bloom's taxonomy and the sample verbs above), and ending with the object of the statement describing the business or business-related learning that students are expected to demonstrate through the action or performance. In addition, learning outcomes statements may also include modifiers that specify standards, conditions, or criteria for acceptable performance or that further clarify or elaborate on the targeted business or business-related learning.

Note: The verb that is chosen for intended learning outcomes statements will help to focus on exactly what is to be assessed and to identify the appropriate tools, instruments, and metrics that can be used to assess the extent of the intended learning.

General Structure of Intended Student Learning Outcomes

Alternative formats for intended learning outcomes statements:

1. **Students will be able to** + **verb** (desired action or performance) + **object** (business or business-related learning) + **optional modifiers** (performance criteria/conditions or targeted learning descriptors).

2. **Students will be able to** + **verb** (desired action or performance) + **optional modifiers** (performance criteria/conditions or targeted learning descriptors) + **object** (business or business-related learning).

Examples

1. **Students will be able to identify the principal concepts and theories in the functional areas of business**.

In this example:

- We begin with the suggested phrase "**Students will be able to**..."
- **Verb** = identify
- **Bloom Level** = remembering
- **Object** = the principal concepts and theories in the functional areas of business
- **Modifiers** = none

2. **Students will be able to integrate legal and ethical principles in business into responsible leadership decisions.**

In this example:

- We begin with the suggested phrase "**Students will be able to**..."
- **Verb** = integrate
- **Bloom Level** = analyzing
- **Object** = legal and ethical principles in business
- **Modifier** = into responsible leadership decisions

3. **Students will be able to formulate innovative management strategies using a triple-bottom-line approach.**

In this example:

- We begin with the suggested phrase "**Students will be able to**..."
- **Verb** = formulate
- **Bloom Level** = creating
- **Object** = innovative management strategies
- **Modifier** = using a triple-bottom-line approach

4. **Students will be able to explain in the context of strategic planning and decision making the intercultural dimensions of management.**

In this example:

- We begin with the suggested phrase "**Students will be able to**..."
- **Verb** = explain
- **Bloom Level** = understanding
- **Modifier** = in the context of strategic planning and decision making
- **Object** = the intercultural dimensions of management

Verbs to Avoid

In order for intended learning outcomes to provide a useful basis for developing appropriate measures and instruments for assessing student learning, they must contain verbs that describe observable, measurable, and achievable actions and performance levels. Consequently, verbs that represent actions or concepts that are difficult or impossible to measure should be avoided. For example, the following verbs should not be used in writing intended student learning outcomes:

- Appreciate
- Be aware of
- Be familiar with
- Believe
- Comprehend
- Know
- Learn
- Understand

As an example, consider the following intended student learning outcome: ***Students will be able to understand the economic environment of business***.

The verb in this statement – understand – is problematic because it is not observable and cannot be measured. How does one measure a student's 'understanding'? What we need to ask is this: What type of action or performance would students have to demonstrate in order to provide evidence of their 'understanding' of the economic environment of business?

What is needed here is to replace 'understand' with a verb that results in an action or performance that can be observed and measured. For example, the following modification results in an intended learning outcome statement that is capable of being measured: ***Students will be able to analyze the impacts of the economic environment on business***.

Although the verbs listed above should not be used when writing intended student learning outcomes, they are appropriate for use in writing broad-based student learning goals as defined by the IACBE. As discussed in Goals, Outcomes, and Objectives on the IACBE website, broad-based student learning goals are generally too broadly stated in order to be measurable in and of themselves. Therefore, intended learning outcomes are articulated in order to make the goals specific and to describe what the goals actually mean. Consequently, terms like 'appreciate,' 'comprehend,' 'know,' and 'understand,' etc. can be used in writing broad-based student learning goals inasmuch as it is not the goals but the intended learning outcomes that are being directly measured through the assessment process.

Characteristics of Good Intended Student Learning Outcomes

Statements of intended student learning outcomes should:

- ❑ specify the level, criteria, or standards for the knowledge, skills, abilities, or competencies that students are expected to be able to demonstrate.
- ❑ include conditions under which students should be able to demonstrate their knowledge, skills, abilities, or competencies.
- ❑ contain active verbs.
- ❑ be measurable.
- ❑ be expressed in ways that make them capable of being measured by more than one assessment tool, instrument, or metric.

Guidelines for Writing Intended Student Learning Outcomes Statements

In writing statements of intended student learning outcomes, an academic business should ensure that its statements:

- ❑ are aligned with the academic business unit's mission and broad-based student learning goals.
- ❑ clearly describe the type and level of learning that are expected of graduates of the business programs, i.e., they should specify (i) the areas/fields that will be the focus of assessment, (ii) the knowledge, skills, abilities, and competencies that students are expected to acquire in those areas/fields upon completion of their programs of study, (iii) the depth of the knowledge, skills, abilities, and competencies that students are expected to demonstrate.
- ❑ are distinct and specific.
- ❑ are expressed in terms of the overall program and not individual courses.
- ❑ are simple declarative statements that are capable of being assessed by a single assessment method, i.e., they should not be complex statements that combine multiple intended outcomes into a single statement requiring the use of multiple assessment methods.

  (**Example of a Complex or Combined Statement**: *Students will be able to recognize and solve complex business problems and effectively communicate the solutions in oral business presentations to professional audiences*. This statement would require two different assessment measures since the instrument required for assessing a student's ability to recognize and solve problems would be different than the instrument needed for assessing oral communication skills.)
- ❑ are expressed in ways that make them capable of being assessed by more than one assessment tool, instrument, or metric, i.e., they should not impose restrictions on the number or type of assessment methods that can be used to measure the extent to which students are achieving the desired outcomes.
- ❑ are expressed from the students' perspective and not in terms of what the academic business unit will do, will provide, or intends to accomplish.

Checklist for Writing Intended Student Learning Outcomes Statements

The following table provides a checklist for academic business units to use in writing clear and effective statements of intended student learning outcomes for their business programs.

Checklist for Writing Intended Student Learning Outcomes	
☐	The statements specify the level, criteria, or standards for the knowledge, skills, abilities, or competencies that students are expected to be able to demonstrate.
☐	The statements include conditions under which students should be able to demonstrate their knowledge, skills, abilities, or competencies.
☐	The statements are written using active verbs that specify definite, observable behaviors or performance levels.
☐	The statements are measurable.
☐	The intended student learning outcomes are distinct and specific to the business programs.
☐	The intended student learning outcomes are aligned with the academic business unit's mission and broad-based student learning goals.
☐	The statements specify (i) the areas/fields that will be the focus of assessment, (ii) the knowledge, skills, abilities, and competencies that students are expected to acquire in those areas/fields upon completion of their programs of study, (iii) the depth of the knowledge, skills, abilities, and competencies that students are expected to demonstrate.
☐	The intended student learning outcomes are expressed in terms of the overall program and not individual courses.
☐	The statements are simple declarative statements that are capable of being assessed by a single assessment method, i.e., they are expressed in ways that do not combine multiple intended outcomes into a single statement requiring the use of multiple assessment methods.
☐	The statements are expressed in ways that make them capable of being assessed by more than one assessment tool, instrument, or metric.
☐	The statements are expressed from the students' perspective and not in terms of what the academic business unit will do, will provide, or intends to accomplish.
☐	It is possible to collect accurate and reliable assessment data for each intended learning outcome.
☐	The statements can be used to identify areas for changes and improvements.
☐	Considered together, the intended student learning outcomes accurately reflect the key desired learning results for each of the academic business unit's programs.

For any checkbox that remains unchecked in the list above, you will need to review your intended student learning outcomes and revise them accordingly before submitting your outcomes assessment plan to the IACBE.

Why Develop Intended Student Learning Outcomes?

There are numerous benefits to academic business units, faculty members, and students of developing a set of clear and effective statements of intended student learning outcomes.

Benefits for Academic Business Units

Intended student learning outcomes statements help to:

- ❑ inform program and curriculum design.
- ❑ identify areas for changes and improvements in curriculum, pedagogy, academic support services, etc.

Benefits for Faculty

Intended student learning outcomes statements help to:

- ❑ inform course content.
- ❑ develop teaching methodologies.
- ❑ identify learning activities and tasks.
- ❑ develop appropriate assessment tools and instruments.

Benefits for Students

Intended student learning outcomes statements help to:

- ❑ provide a framework for guiding their studies.
- ❑ inform students of what is expected of them in their programs of study.
- ❑ prepare them for assessment.