WRITING EFFECTIVE
LEARNING OUTCOMES

at program and course levels for post-secondary educators

Created by Liesel Knaack (2023)

Definition of Learning Outcomes

Learning outcomes are direct statements about ***intended/anticipated*** **student learning** along with the depth of learning that is expected after the course (or program) has been completed.

Since all learning is not predictable or guaranteed, and each student learns at their own speed, learning outcomes serve as **'guideposts'** for both the teacher and student.

The teacher uses the learning outcomes to help design learning experiences and uses the outcomes to offer guidance to students as they progress throughout that experience. As with all learning experiences, there are twists and turns, new pathways created, and new learning uncovered. The original learning outcomes may morph or evolve as the course or program unfolds. The teacher may adapt the learning outcomes or create sub-outcomes that provide more detail and direction for students, align with current events or happenings in the world, or consider new achievements in research etc.

The student uses learning outcomes as an indication of where they are heading and what demonstrations of learning will be expected of them.

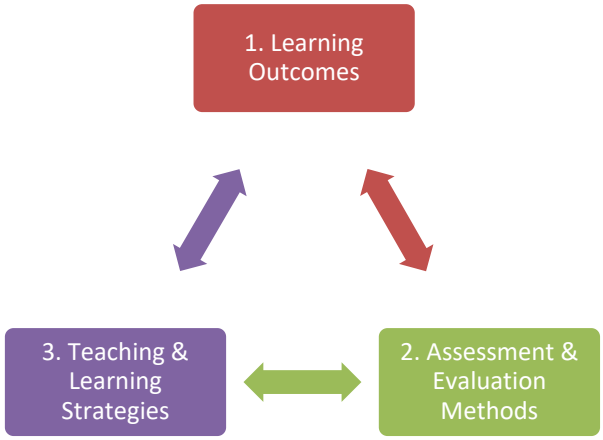
Learning outcomes are:

- what students should know and be able to demonstrate, as well as the depth of the learning that is expected by the end of a course or program (and hopefully a year after the course is over)
- **knowledge, skills, and values** required by students to demonstrate learning of core concepts or big ideas of a course or program
- often presented in the **cognitive, psychomotor, and affective domains**, but also reflect a range of interacting knowledge, skills and attitudes through various dimensions and taxonomies
- another way to look at learning outcomes is by referring to the 3 H's: the **habits of the head** (what you want students to know); **habits of the hand** (what you want students to be able to do) and **habits of the heart** (what qualities and attributes you want students to have)
- based on unique program situational factors and contexts, the number of learning outcomes that represent a graduate's integrated and essential learning might be demonstrated through:
    - ~5-8 broadly stated COURSE learning outcomes (any more than 8 and it becomes challenging to appropriate assess and evaluate within a 36-45 hour course; adjust for shorter/longer courses)
    - ~5-12 broadly stated PROGRAM learning outcomes (any more than 12 and it becomes challenging to appropriate assess and evaluate within a 2-4 year program; adjust for shorter/longer programs)

  Note: While you will create learning outcomes as best as you can with the curriculum, course content and student learning in mind, unintended learning outcomes do arise during the progress of a course or over a program's time. Therefore, some learning outcomes may be more constant, whereas other learning outcomes may need to be adjusted, enhanced or created due to learning situations, student needs or course design needs. Learning outcomes are not fixed and should evolve as the course evolves over years and as students engage in their learning experiences.

How Do Learning Outcomes Fit Within the Course Design?

- learning outcomes are linked to the assessment and evaluation methods, along with the teaching and learning strategies
- write/edit your learning outcomes first, before your other methods and strategies are chosen
- always keep the learner front and centre during the planning process

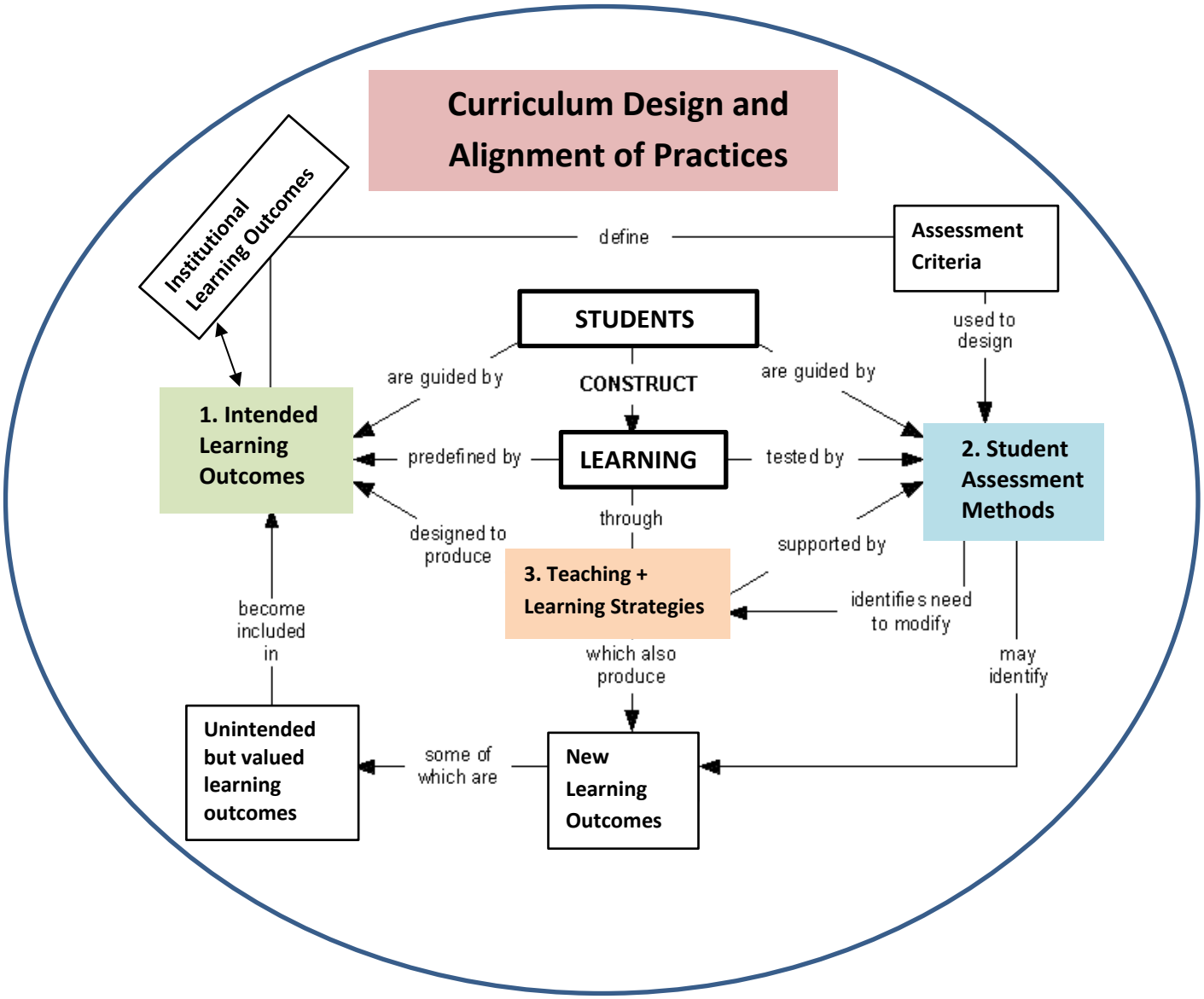


Alignment Chart

Try completing this chart to see if you have aligned your learning outcomes with your assessment and evaluation methods, the demonstrations of learning you hope to see and the teaching strategies you'll use to help students achieve the outcomes. An example has been provided. An aligned course ensures all four of these areas are connected for optimal student learning.

Learning Outcome	**Assessment or Evaluation Method**	**Evidence or Demonstration of Learning by Student**	**Teaching and Learning Strategy**
By the end of this course, students should be able to:			
… justify, with evidence, three different perspectives (one an Indigenous perspective) about how a community should work together to manage a recently identified new natural resource through development of a visual display and verbal presentation to peers.	Community Council Simulation Presentation: Peer, Self and Teacher Assessment of Perspectives	Production of a digital or paper display with three perspectives and evidence as might be given at a community council meeting	• Case Studies • Problem-based Learning • Community Interviews • Team-Based Learning

The Learning Outcome Connection: Designing Aligned Courses



This diagram shows the interconnectedness of learning outcomes across the curriculum design and alignment process.

1. **Intended Learning Outcomes** for a course should be connected and influenced by the institutional learning outcomes (or graduate attributes).
2. The course learning outcomes should define the assessment criteria that is used to design **Student Assessment Methods**. This is the connection between what the students should know, do, and value by the end of the course and how they will demonstrate/how you will observer the learning of these outcomes.
3. Students (guided by learning outcomes and assessment methods) will construct learning (predefined by learning outcomes and tested by assessment methods) through appropriately designed **Teaching and Learning Strategies.**
4. The assessment methods may uncover new learning outcomes (be them intended or unintended) which may or may not be included in the overall course outcomes.

Modified diagram from Houghton, Warren (2004) *Engineering Subject Centre Guide: Learning and Teaching Theory for Engineering Academics.* Loughborough: HEA Engineering Subject Centre http://exchange.ac.uk/learning-and-teaching-theory-guide/constructive-alignment.html

Difference between Objectives and Outcomes

Objectives are often written from a **teacher's perspective** and typically are written in terms of their **teaching intentions** and indicate what content they intend to achieve through instruction, curricula, programs, or activities: Objectives are focused on specific types of performances that students are expected to demonstrate.

For example

- This course will use videos and guest speakers to cover the historical events that happened in manufacturing between 1910 and 1950 in Canada.
- This course will present various human resource challenges and explore implications for business decisions.

Outcomes are statements about **anticipated achievements from students**. They are more student-centered and describe what the learner should learn. Learning outcomes are what is hoped for students to learn along their journey and are often precise, specific, and measurable.

For example

- By the end of this course, students should be able to explain the core historical Canadian events in manufacturing that happened between 1910 and 1950 through creation of a poster presentation
- By the end of this course, students should be able to describe the four human resource challenges and the associated implications for business decisions through a case analysis of a northern BC town

Progression of Writing a Better Learning Outcome

× **Students will be able to write a lab report.**

- Students will be able to write a lab report following the institution's lab report format. *(added criterion – following the specific format of institution)*

  ✓ At the end of the lab portion of this course, students should be able to write a lab report following the institution's report format. *(added the condition under which the behavior will be occurring – 'at the end of the lab portion of course' and changed the intention to "should" vs. "will" to provide a realistic opportunity)*

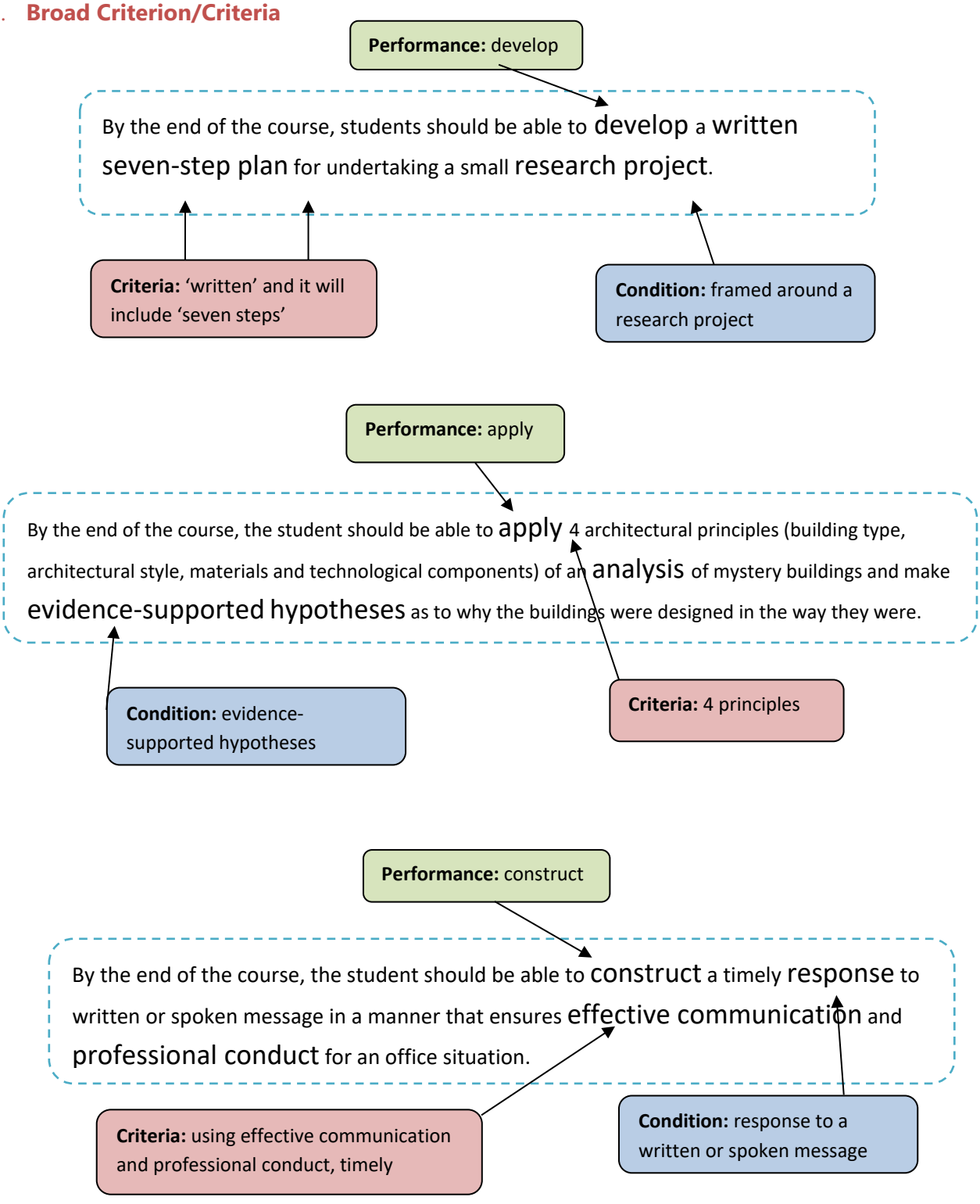
× **Students will use technology effectively.**

- Students will use word processing, spreadsheets and presentation graphics to professionally prepare their final business report and project. *(clarified technology = word processing etc.)*

  ✓ By the end of this business course, students should be able to effectively use word processing, spreadsheets and presentation graphics to professionally prepare their final business report and project. *(added condition under which the behavior is occurring – through preparation of final business report and project and changed "should" vs. "will" to provide a realistic opportunity)*

Three Parts of a Learning Outcome

1. **Action Word** (Performance)
2. **Learning Statement** (Condition)
3. **Broad Criterion/Criteria**



Creating Well-Written Learning Outcomes

1. Start with an **action verb** that is **measurable** and **observable**. (Part 1) See charts on following pages with SUGGESTED (but not definitive) examples of possible actions for students. It is important that the student can demonstrate the learning and you can observe and measure their degree of accomplishment.

2. Follow the verb with a **statement** that indicates the **description of learning** to be demonstrated (Part 2)

3. End with a **statement** to give the learning outcome **context** and to identify **criteria** for an acceptable performance. Use the words "by" or "through" that will help with stating how the learning outcome will be assessed (Part 3)

4. Be **specific and not ambiguous**. The following verbs are not that specific and do not result in observable demonstrations of student learning. Avoid fuzzy or vague terms when possible.
   - Awareness of
   - Appreciation for
   - Capable of
   - Comprehend
   - Conscious of
   - Familiar with
   - Shows interest in
   - Knows
   - Has knowledge of
   - Learns
   - Likes
   - Memorizes
   - Understands

5. Create a **balanced set** of learning outcomes. Too broad a learning outcome will be difficult to assess, while an extensive list of detailed learning outcomes will limit flexibility and adaptability of the curriculum.

6. **Indigenous Outcomes:** In recognition of the Calls to Action for the Truth and Reconciliation report and our own work towards decolonizing and broadening the perspectives and ways of knowing in our courses you should have Indigenous aspects to your learning outcomes.

7. Be **concise and clearly state** the intended learning outcomes. Make it friendly for students, faculty members and others.

8. The learning outcomes must be **realistic** (related to the real-world) **and attainable** within the time of the course or program.

NOTE: Sometimes it is helpful to have a short preamble that explains a certain context, set of intentions or possible directions for the demonstrations of learning in the course that should not be written within in a learning outcome statement. If you find you are repeating yourself in your learning outcomes or want to state some things about how the learning outcomes function or are developed, consider writing a short paragraph to precede them. You can include this in the "Course Goals" section of Curriculog when submitting to Curriculum Committee.

Categories of Learning: Creating a Variety for Students

	Affective (Feelings/Attitudes)	**Cognitive** (Mental Skills/Knowledge)	**Psychomotor** (Manual/Physical Skills)
Lower Levels of Learning	**Overview** The student is aware of the situation and can control attention to it. The student also can be actively involved in the situation and has appropriate responses. ***Examples*** *Respectfully listens to group leader. Participates in discussions and suggests new ideas. Assists colleagues with tasks.*	**Overview** The student retrieves and recalls basic information from memory. Students show their ability to construct meaning from material that results in demonstrating comprehension. This knowledge provides the foundation for other kinds of learning. ***Example*** *Recites a poem. Translates a foreign language paragraph. Explains in own words how to perform the experiment.*	**Overview** The student uses sensory clues to inform his/her motor activity. The student is ready to act and is set to take on a task. ***Examples*** *Able to operate a simple tool. Copy or create art after taking lessons from an instructor. Shows basic balance beam movements with some assistance.*
Medium Levels of Learning	**Overview** The student has a set of internalized values and can accept and have commitment to a value. ***Examples*** *Shows sensitivity towards others in awkward situations. Shows problem solving abilities when a situation has arisen.*	**Overview** The student can demonstrate an application of knowledge. The student is also able to break down, examine and analyze information. ***Examples*** *Applies formula to a new set of variables. Uses a spreadsheet to calculate taxes. Compares two magazine design proposals in terms of pros/cons.*	**Overview** The student practices a simple skill under the supervision of instructor. The student moves on to carry out that skill by demonstrating confidence and proficiency. The student moves to handling more complex tasks in a smooth manner. ***Examples*** *With fewer errors and through co-ordination of many actions, a final video cut is produced with sound and graphics.*
Higher Levels of Learning	**Overview** The student can organize values, resolve conflicts and create a new value system. In addition, the student can develop a consistent response to a set of values and use them in a variety of situations. ***Examples*** *Accepts responsibility for one's learning and behavior. Adjusts behavior when new information is presented.*	**Overview** The student can problem solve and make judgments through evaluating and supporting information along with creating and designing new knowledge. ***Examples*** *Designs a new experiment to test a concept. Justifies the choice of a position on an issue. Evaluates and ranks the arguments for immediate climate change.*	**Overview** The student adapts motor responses when encountering new situations and problems. The student is also able to create new motor responses for adapting when new skill sets are required. ***Examples*** *Demonstrates advanced and natural movements of tennis strokes without having to take time to think and react.*

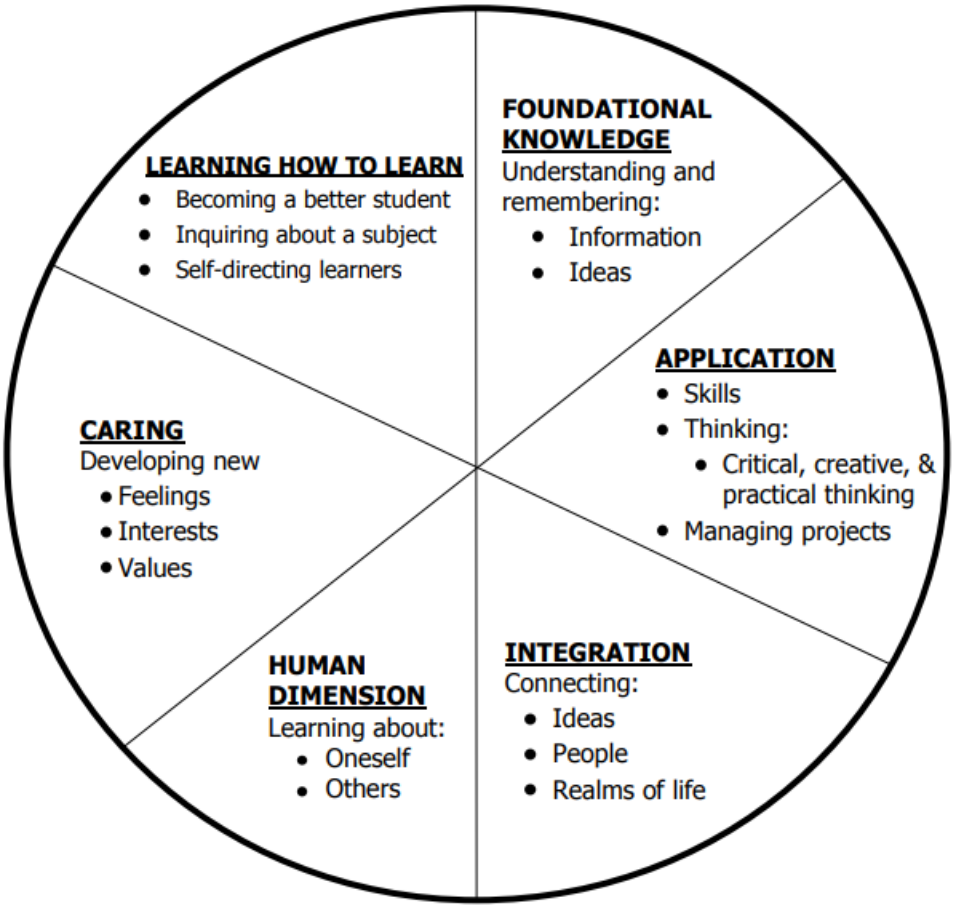
Action Verbs Used in the Creation of Learning Outcomes

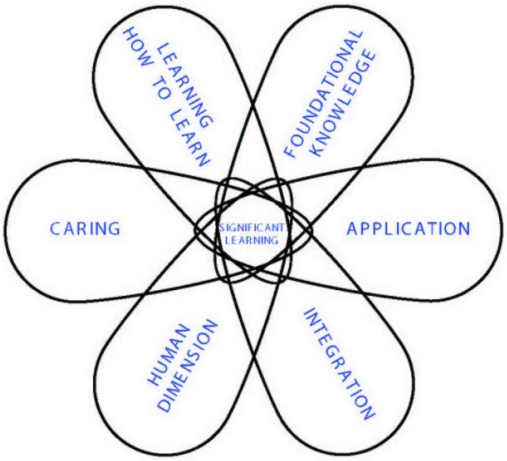
	Affective (Feelings/Attitudes)	**Cognitive** (Mental Skills/Knowledge)	**Psychomotor** (Manual/Physical Skills)
Lower Levels of Learning	Aid Answer Ask Assist Attempt Choose Comply Conform Describe Discuss Follow Give Help Identify Listen Locate Name Observe Perform Practice Question Read Report Request Respond Select	Cite Define Estimate Find List Name Recognize Rephrase Select State Transfer Acquire Clarify Describe Explain Identify Locate Outline Record Report Show Summarize Translate Memorize Choose Draw File Label Match Recall Relate Review Sort Tell Write Repeat	Choose Detect Differentiate Display Distinguish Explain Identify Isolate Link Listen Observe Point To Proceed React Relate Respond Select Show
Medium Levels of Learning	Accept Appreciate Choose Commit Complete Concern Demonstrate Describe Differentiate Distinguish Explain Express Initiate Invite Join Justify Propose Share	Adjust Apply Classify Differentiate Examine Illustrate Inspect Modify Prepare Question Tabulate Use Survey Contrast Organize Alter Calculate Compare Discriminate Extract Infer Investigate Order Produce Separate Test Dissect Probe Detect Translate Analyze Categorize Compute Distinguish Extrapolate Interpret Manipulate Predict Relate Solve Uncover Verify Inquire Deduce	Adjust Assemble Build Calibrate Close Construct Disconnect Dismantle Dissect Draw Duplicate Grind Heat Load Loosen Manipulate Mend Open Organize Replace Rotate Select Sort
Higher Levels of Learning	Act Arrange Adhere Change Combine Compare Contrast Defend Demonstrate Formulate Generalize Identify Integrate Influence Mediate Organize Perform Propose Qualify Question Revise Solve Synthesize Verify	Appraise Assess Compile Choose Construct Design Develop Formulate Implement Justify Propose Rate Reorder Revise Synthesize Approve Build Compose Conclude Create Devise Diagnose Generate Indicate Organize Prove Rearrange Research Support Transform Assemble Combine Conceive Confirm Criticize Discover Evaluate Integrate Judge Plan Rank Recommend Resolve Structure Validate	Adapt Alter Build Create Change Combine Compose Construct Design Devise Initiate Modify Originate Rearrange Reorganize Revise

Gross & MacKeracher. (n.d)

Another Approach to Learning Outcomes: Significant Learning

The 'cognitive' charts on the previous pages are based on Revised Bloom's Taxonomy. They present one way to look at learning. Dee Fink (2013) presents another way to consider the design of significant learning experiences, called A Taxonomy of Significant Learning. You may wish to write your learning outcomes considering these six interconnected components.





In Fink's taxonomy of learning, he presents each kind of learning as interactive. This means that one kind of learning can stimulate another kind of learning. You do not need to include all the kinds of learning in your course but the more you can include, the more interconnected the learning experience will be for your students.

Writing Learning Outcomes: Significant Learning Guiding Questions

Here are some writing prompts/questions for you to consider when writing learning outcomes using Fink's taxonomy. "**A year (or more) after this course is over, I want and hope students will…."**

Significant Learning Category	Questions to Ask in Formulating your Learning Outcomes
Foundational Knowledge *students' ability to remember and understand information*	What key information (facts, terms, formula, concepts, relationships) is important for students to understand and remember in the future? What key ideas or perspectives are important for students to understand in this course?
Application *Learning a new action, whether a new skill, way of thinking or how to manage projects*	What kinds of thinking are important for students to learn: • Critical thinking, in which students analyze and evaluate? • Creative thinking, in which students imagine and create? • Practical thinking, in which students solve problems and make decisions? What important skills do students need to learn? What complex projects do students need to learn how to manage?
Integration *Making connections between ideas, learning experiences or from one area of life to another.*	What connections (similarities and interactions) should students recognize and make… • Among ideas *within* this course? • Among the information, ideas, and perspectives in this course and those in other courses or areas? • Between material in this course and the students' own personal, social, and work lives?
Human Dimension *Learning about yourself and others.*	What can or should students learn about *themselves*? What can or should students learn about interacting with people they may encounter in the future?
Caring *Developing interest or value for the topic within students.*	What changes would you like to see in what students care about, that is, any changes in their… • Interests? • Values? • Feelings?
Learning How to Learn *Helping students become self-directed, self-regulated learning so they can learn beyond the course*	What would you like for students to learn about… • How to be a good student in a course like this? • How to engage in inquiry and construct knowledge with this subject matter? • How to become a self-directing learner relative to this subject? That is, have a learning agenda of what else they need and want to learn and a plan for learning it?

Examples of Learning Outcomes

Geology: By the end of this course, students should be able to demonstrate how magma geochemistry relates to partial melting of the mantle by contrasting the outcomes of this process in different tectonic regimes through the critical analysis of specific case studies.

Biochemistry: By the end of this course, students should be able to apply the principles underpinning the use of molecular graphics in the design of drugs to illustrate general and specific cases through a computer-based presentation.

English: Students should be able to analyze the relationship between the language of satire to literary form by the close examination of a selected number of eighteenth-century texts in a written essay.

Environmental Studies: Students should be able to evaluate multiple solutions to various environmental and scientific questions and assess potential outcomes to justify optimal and ethical solutions when presented with several authentic situations.

Theatre: Use voice, movement and dramatic character and situation to affect an audience through in class and final project presentations

History: Recall factual claims about the past and synthesize them into coherent interpretative arguments through a term paper and final debate project.

References

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Checklist for Writing Effective Learning Outcomes

As you are working through the development of learning outcomes for your course or program, consider the following items in this checklist.

- ☐ Have you focused on **outcomes of student learning**, not processes of how you will teach?
- ☐ Do the outcomes accurately **describe what a graduate of the course/program should know, value and be able to do**? Do the outcomes describe the unique strengths that a graduate of the program should possess? Are there any specific statements that should be added, consolidated and/or removed?
- ☐ Does the outcome contain an **action verb?**
- ☐ Have you used only **one action verb** per learning outcome?
- ☐ Have you **avoided vague verbs** such as 'know' and 'understand' that are not measurable?
- ☐ Do the verbs reflect the **level of learning required?** (see charts for high, low and medium levels)
- ☐ Are the learning outcomes **observable and measurable**?
- ☐ Are the learning outcome statements **concise and specific**?
- ☐ Could the learning outcomes be **understood by multiple audiences** (e.g. students, instructors, employers, administrators, across institutions)?
- ☐ Have you written the outcomes in terms of what the **learner does**, not what the instructor does?
- ☐ Do your outcomes reflect **knowledge, skills, or attitudes** required?
- ☐ Are the outcomes **reflective of the discipline**? Would the discipline be clear if the statement were read in isolation? If not, what additional detail could be added to provide additional disciplinary context?
- ☐ Have you included outcomes that are **woven into the entire** course?
- ☐ Do you have an **appropriate number** of outcomes? (especially not too many)
- ☐ Do the outcomes fit within **program and course goals**?