Writing Learning Outcomes:
Principles, Considerations, and Examples

Jean-François Richard, Ph.D.
Associate Vice-President, Academic and Faculty Affairs
Université de Moncton

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1.   Introduction

The task of planning for teaching and learning is of vital importance for determining the various elements that will provide direction for a program and all the courses it comprises. In terms of course development, the list of content topics determined by faculty can be used as an important planning tool; however, it does not identify the knowledge, skills and competencies that the students will have to develop by the end of their learning process in the context of a given course (Prégent, 1994). It is in writing the learning outcomes that the professor can define these dimensions more accurately. Consequently, well-defined learning outcomes clarify not only the goals to be reached in a course, but also help clarify the educational directions to take for the delivery of the course as well as the framework for the assessment of learning.

To ensure the best possible quality in our curricula*, the purpose of this document is to present a synthesis of principles and considerations in the process of writing learning outcomes.* A presentation on this topic seems fitting since the Université de Moncton has just revised its policy on program assessment (May 2013) in order to ensure better compliance with the Maritime Provinces Higher Education Commission's revised policy (MPHEC, March 2013), which puts more emphasis on student learning outcomes for the sake of transparency and accountability. The hope is that this document will help in our collective efforts from classroom instruction to the development and revision of programs.

2.   Learning outcomes as a guide for planning, teaching, and assessment

According to Legendre (2005) and Miller, Linn & Gronlund (2013), from an educational standpoint, learning outcomes specify the type of performance that a student must achieve during or by the end of an educational context (i.e. learning task, course, etc.) or a program of study. More specifically, a learning outcome "expresses the lasting changes that must arise to the student during or following an educational experience" [translation] (Legendre, 2005, p. 946). Given that learning is not directly observable, its manifestations, which result from learning and show "lasting changes", must be perceptible by means of *indicators* showing a transformation or a change with respect to behaviours related to targeted learning (e.g. the ability to solve a math problem following instruction).

Generally speaking, and by analogy, a learning outcome can been seen as a target to meet. The targets or *outcomes* of a course are related to the learning that the faculty member sets for the students to achieve as part of a given body of knowledge (Prégent, 1994).

In general, a lack of clearly defined learning outcomes can have a negative effect on the quality of instruction, learning, and learning assessment. Such deficiencies in planning have a tremendous impact on the consistency of teaching overall, and especially on learning assessment. We could therefore consider that the presence of clearly defined learning outcomes offers a series of advantages, both for faculty and students (Prégent, 1994):

1. Clearly state intentions through outcomes (general and specific);
2. Design and implement learning activities to achieve the established outcomes;
3. Evaluate only the outcomes through activities that have been conducted in the classroom.

The **first advantage** is that faculty are able to state the outcomes or directions of their course to students in a *clear, plain, and precise* manner given that the course outcomes help them to specify the nature of the topics addressed in a course as well as the nature of the expected learning (Prégent, 1994). This advantage aligns with a basic edumetric principle, i.e. **transparency** in the teaching/learning/assessment process (Bercier-Larivière and Forgette-Giroux, 1999).

The **second advantage** is that faculty must choose only the educational approaches and teaching strategies that can help to achieve the targeted outcomes. In fact, it would be absurd, even illogical, to use approaches that would not help to fully achieve the targeted outcomes (Prégent, 1994).

The **third** and most important **advantage** is that faculty must establish a direct relationship between the specific learning outcomes and learning assessment. ***Thus, once they have written out specific outcomes, they have, in turn, set out the nature of the exam questions or the evaluation criteria for a given piece of work (Prégent, 1994).***

2.1 General learning outcomes

As was mentioned earlier, the aim of the learning outcome is to determine the lasting changes following a course or program of instruction. Consequently, general outcomes are used to provide direction with respect to what is to be learned in a program or in a specific course. These outcomes are expressed abstractly and present a wide range of anticipated characteristics or lasting changes that may develop in a group of students following an extended learning scenario (Legendre, 2005). These changes are often expressed in terms of **knowledge to acquire and *skills and competencies to be developed***. Moreover, general learning outcomes determine the learning path on the basis of the three main domains of learning, which are expressed through various *taxonomies*. These three main domains are ***cognitive, psychomotor, and affective learning***.

Even though all of these domains are part of teaching at the university level, most of the learning at this level is likely to be cognitive in nature, regardless of the program of instruction. While we certainly do not want to neglect the psychomotor and affective learning domains, this document is oriented more towards the writing of cognitive learning outcomes. In this regard, the taxonomy that is best known and used throughout the world is that developed by ***Benjamin Bloom (1956).*** This taxonomy presents the learning objectives as a continuum starting with the most basic cognitive ability objectives (e.g. knowledge and understanding) and moving on to the more complex cognitive abilities and skills (e.g. synthesis and evaluation).

Tables 1 and 2 present a synthesis of Bloom's Taxonomy, including examples of verbs that can be used in writing out general and specific objectives or outcomes at the different cognitive levels and content that is often exploited at these different levels of this taxonomy. Depending on the verb used, the statement of the objective or outcome helps determine the expected complexity in terms of learning.

Table 1: **Bloom's Taxonomy**

Knowledge	Knowing how to accurately relate or reproduce any previously acquired information or knowledge.
Comprehension	Understanding the meaning, translation, interpolation, and interpretation of instructions and problems.
Application	Using previously acquired knowledge, skills and competencies in new situations in an effort to solve problems in the best way possible or in a unique way.
Analysis	Dividing up or breaking down an object or information into its parts, examining them (in an attempt to understand them or to understand their functionality or structure) by identifying causes and making inferences to support generalizations.
Synthesis	Putting into practice a knowledge and skill set in order to form a coherent and original whole.
Evaluation	Making judgments on the value of something based on one's knowledge, methods, and values in order to make something new by following a specific goal and established protocols.

Table 2: Bloom's Taxonomy: Verbs and related content

Categories	Verbs for general learning objectives or outcomes (partial list)	Verbs for specific learning objectives or outcomes	Content
Knowledge	Identify, recognize, recall…	Arrange, define, duplicate, know, label, list, match, memorize, name, order, quote, recognize, recall, repeat,	Facts, places, information, objects, events, characteristics, vocabulary
Comprehension	Understand, grasp the meaning, translate, extrapolate, interpret…	Characterize, classify, complete, depict, describe, discuss, establish, explain, express, identify, illustrate, locate, recognize, report, relate, review, sort, translate	Words, sentences, ideas, definitions, meanings, new examples, relationships, aspects, consequences
Application	Apply, make use of…	Administer, apply, calculate, choose, compute, conduct, demonstrate, dramatize, employ, implement, interpret, operate, perform, practice, prescribe, sketch, solve	New situations, problems, difficulties, situations
Analysis	Analyze, organize…	Analyze, appraise, categorize, compare, contrast, critique, diagram, differentiate, discriminate, distinguish, detect, examine, experiment, explore, explain, inventory, investigate, question research, test	Causes, effects, principles, connections, events, conducts, devices, parts, instruments, errors, fallacies, facts, hypotheses and arguments
Synthesis	Summarize, compose, create, invent, design, develop…	Combine, compose, consolidate, construct, create, design, formulate, hypothesize, integrate, merge, organize, plan, propose, synthesize, systematize, theorize, unite, write	Undertakings, writings, narrations, descriptions, colours, shapes, stories, theories, structures, models, discoveries
Evaluation	Evaluate, judge, compare…	Appraise, argue, assess, critique, defend, distinguish, envision, estimate, examine, grade, inspect, judge, justify, rank, rate, review, value, validate	Advantages, disadvantages, decisions, similarities, difficulties, agreements, disagreements, strengths, weaknesses

To come back to the definition and characteristics of the general learning outcome, and by referring to Bloom's Taxonomy, the verbs commonly used reflect the targeted transformation ***without specifying the perceptible and observable manifestations of this transformation***. For example:

Example 1

Training in a nursing context -

- Students will be able to ***understand*** the theoretical foundations underpinning geriatric care. (Level 2)

  How is understanding determined? How do the students show this understanding?

Mathematics course context -

- Students will be able to ***apply*** various mathematical operations in a problem-solving context. (Level 3)

> *How is the nature of this application determined? What are the student behaviours that will help determine if the application is in accordance with the desired outcomes based on the direction of the outcome and the related content?*

These questions can and should be answered through the ***specific learning outcome***, which is explained in greater detail in section **2.2.**

However, before completing this section, certain nuances must be pointed out between **program goals, the general learning outcomes of a program, and the general learning outcomes of a course**. According to Legendre (2005), from an educational standpoint, the **goal** refers to a general statement of intent and direction that explains one or more outcomes. The following are good examples of verbs that can be used to state the goal of a program: ***develop, train, educate, become familiar with***, ***become aware, initiate, acquire***, **and** ***broaden***. These types of verbs present intentions that are unlimited, with as much scope as you want to give them, depending on the nature and education level of the program in question. For example, nobody can dispute the purpose of ***developing*** certain attitudes, knowledge, or skills as part of a program. However, when it comes to a particular program, how far is this ***development*** taken? The general learning outcomes of a program and the general learning outcomes and specific learning outcomes of a course determine the extent of the development within the said program. The goals of a program remain general because they cover a large area and should be aligned with the perceived actual and future societal needs in contemporary society and in the future.

The general learning outcomes of a program and ***the general learning outcomes of a course*** set out all of the expected outcomes upon completion of a learning process. In both cases, these outcomes are general and as mentioned earlier, are often written in the form of knowledge and ***skills to be acquired or abilities and competencies to be developed***. The fact remains that the program outcome is designed to specify the major learning outcomes to be achieved ***upon completion of the program of instruction***. As for the general learning outcomes relating to a course, the aim is to specify the learning outcomes ***upon completing said course***. To better illustrate the differences between these levels of planning, below are some examples from various curricula:

Example 2

As part of a master's program in education – school administration:

Program goal
The purpose of this program is to…
Introduce the students to research in the field of school administration (based on and modified from the master's degree course in Education – Université de Montréal).

General learning outcome of the program
By the end of this program…
Students will be able to analyze the data from various qualitative and quantitative analysis methods in examining issues relating to the administrative leadership of schools.

General learning outcome of a course
By the end of this course…
Students will be able to analyze texts using a quantitative method (excerpt from the master's degree course in education entitled Méthodes quantitatives de recherche at the Université de Moncton).

As part of an undergraduate program in history…

Program goal
The purpose of this program is to…
Enable students to broaden their knowledge with respect to human evolution.

General learning outcome of the program
By the end of this program…
Students will be able to summarize knowledge of the past using an ethical, scientific approach (excerpt from the bachelor of history program at Université Laval).

General learning outcome of a course
By the end of the course…
Students will be able to recognize the major stages and aspects of the historical evolution of Canada from the arrival of the first humans to the present day (excerpt from the History of Canada course at Université Laval).

As part of a training course on nutrition and dietetics…

Program goal
The purpose of this program is to…
Train health professionals specializing in nutrition to be able to guide individuals and groups in their food choices and eating habits in order to prevent disease and promote the re-establishment and maintenance of optimal health (excerpt from the bachelor of science program in nutrition at the Université de Moncton).

General learning outcome of the program
By the end of this program…
Students will be able to apply management principals in various fields relating to dietetics.

General learning outcome of a course
By the end of this course…
Students will be able to analyze the nutritional needs of people with various medical conditions.

As part of an undergraduate program in physics…

Program goal
The purpose of this program is to…
***Develop** the students' intellectual curiosity and critical thinking with respect to science.*

General learning outcome of the program
By the end of this program…
*Students will be able to **apply** concepts from various fields of physics (i.e. electromagnetism, thermodynamics, modern physics, etc.) to complex problems.*

General learning outcome of a course
By the end of this course…
*Students will be able to **understand** how stars work and evolve.*

To conclude this section, there is no magic formula to determine the optimal number of goals and general learning outcomes that should be included in a program. Since the goals are very broad, it is conceivable to have a rather limited number, i.e. three to six. The learning outcomes of a program can be higher in number, easily ranging from four to 12. A typical 3-credit university course (45 course hours) usually has two to six general outcomes. *Several factors can be taken into consideration* when determining the number of general outcomes of a course, such as when the course is taken (at the start or end of a program), what level it is taken at (undergraduate or graduate), and the nature of the targeted learning (general knowledge versus more specific analyses and applications). Thus, it is very useful for professors, and indeed all faculty members in charge of an academic program, to work together on developing an overview for the program to ensure a *logical progression* and an *internal consistency*.

2.2   Specific learning outcomes

Specific outcomes relate content to ability by formulating as precisely as possible the knowledge, skills or abilities that a learner must acquire or improve during or by the end of a learning situation (Legendre, 2005). Specific outcomes help relate a given subject to a course outcome (general outcome) and the performance expected of the students. Briefly, specific outcomes:

- Result from the reduction or decomposition of a general outcome;
- List the behaviours or external manifestations of an internal change (general outcome) or knowledge, abilities, or skills expected from the general outcome;
- Represent the expected behaviours of students, i.e. an observable reaction or behaviour (external change).

The verbs used in the writing of specific outcomes are ***action verbs that enable us to observe (directly or indirectly) and evaluate the performance in question with a greater degree of accuracy.***

3.   Writing learning outcomes: principles, considerations, and other examples

The purpose of this next section is to explain the key factors involved in writing general and specific learning outcomes, which must be clear, concise, and most importantly, consistent in order to effectively reflect the faculty member's educational intentions.

3.1   Writing general learning outcomes

As presented earlier, the general learning outcomes represent the outcomes of a program or course, whether they are related to knowledge, abilities, or skills to be developed. General learning outcomes are short statements of only a few lines based on the learning outcomes or results to be achieved and generally start with a *verb*. General learning outcomes for a program or a course can be prepared by completing the following sentences, for example:

> *By the end of the course,*
>
> *Students will,…will be able to…*

To complete such a sentence, professors would have a series of statements that start with verbs or general verbal expressions that relate to the various levels of Bloom's Taxonomy (Table 2). The general learning outcomes for programs and courses presented in ***Example 2*** are good illustrations of learning involving various levels of cognitive complexity.

3.2   Writing specific learning outcomes

Specific outcomes represent the operational level for the targeted learning outcomes of a course. They too consist of a brief statement geared towards what the students should be able to understand or do in order to meet the general learning outcomes set out for the course. Specific outcomes start with an ***action verb*** (see verbs – specific outcomes in Table 2), **one or more complements,** and, in some cases, **conditions for completion.** The complements and conditions for completion help clarify the nature and specific context of the learning, thus ensuring a higher degree of alignment between the general learning outcome and the specific outcomes that stem from it.

As with the writing of general outcomes, there is no prescribed formula for establishing an optimal number of specific outcomes for each general outcome of a course. In principle, depending on the content of the general outcome in question, there are usually **two to six specific outcomes**. Some examples of specific course learning outcomes related to general course learning outcomes are presented in ***Example 3***. When reviewing these examples, pay special attention to the verbs used for the general outcomes (i.e. overall

and general scope aimed at an internal change) and the specific outcomes (i.e. a more targeted scope aimed at an external behaviour that demonstrates the targeted learning). Also take note of the complements and, in some cases, the conditions of completion that provide a greater degree of precision with respect to what the students must be able to accomplish in terms of their learning:

Example 3

> **As part of a master's course in education – school administration (quantitative methods in research):**
>
> > *General outcome - Students will be able to **analyze** the data from various qualitative and quantitative analysis methods in examining issues relating to the administrative leadership of schools.*
> >
> > *Specific outcome - Students will be able to **explain** the meaning of the results obtained from various inferential analyses using case studies.*
>
> **As part of an undergraduate course in history (History of Canada):**
>
> > *General outcome - Students will **know** the major stages and aspects of the historical evolution of Canada from the arrival of the first humans to the present day (based on the History of Canada course – Université Laval).*
> >
> > *Specific outcome - Students will be able to **name** the main First Nations who lived on what is now considered Canadian soil before the arrival of the first Europeans.*
>
> **As part of an undergraduate course in physics (Astronomy):**
>
> > *General outcome - Students will be able to **understand** how stars work and evolve.*
> >
> > *Specific outcome - Students will be able to **explain** the nucleosynthesis of the elements in stars.*
>
> **As part of an undergraduate training course in nutrition and dietetics (Clinical Nutrition):**
>
> > *General outcome - Students will be able to **analyze** the nutritional needs of individuals with various medical conditions.*
> >
> > *Specific outcome - Students will be able to **detect** the nutritional deficiencies of geriatric patients with various medical conditions using case studies.*

Here is another example that presents the link between general and specific outcomes taken from a university undergraduate course. This example clearly illustrates the link between outcomes, content, and course evaluation. This type of table can be used as a ***medium- and long-term planning tool*** and can even be integrated into the course plan, enabling students to see at a glance the proposed learning outcomes and course sequence.

Table 3: **Excerpt from a course plan presenting a long-term plan showing the links between the general and specific outcomes, course content, and learning assessment (adapted from the course SANT 1003 – Initiation to University Studies, Université de Moncton).**

Course #/ date	General Outcomes	Specific outcomes	Educational Activities: Individual (I), Group (G), Class (C)	Assessment
3 **Sept. 10** **4** **Sept. 15**	Use self-learning methods that facilitate the ongoing renewal of	3.1 Choose various ways to connect the main concepts of a subject of study, e.g. a graphic organizer.	Mapping (theory workshop) (G and I) Presentation of related content (C)	CLIC (Oct. 17) Submit the four group maps in the drop box, including those needing

	knowledge and skills.		Practice exam on CLIC (I) Access verification - Student Services modules	correction (7 points). Final exam
9 **Oct. 1**	Interpret health sciences documentary resources.	9.1 Define information literacy skills. 9.2 Explain the importance of information literacy skills in terms of university studies.	Presentation of related content (C) (Librarian)	Final exam and project
16 **Nov. 5**	Establish a bank of health sciences documentary resources.	16.1 Produce an electronic portfolio that shows the required entries (theory workshop).	Presentation of related content (C)	Final exam Submit portfolio Dec. 5

4. Conclusion

The content and the specificity of learning outcomes have a major impact on the quality of our programs and courses. A program or course without clearly defined outcomes is, by analogy, comparable to running a race without a finish line. How can you determine if you've arrived?! For faculty, the challenge is to identify the various benchmarks of our programs and courses in order to establish a progressive and logical continuum that will ensure a better quality of instruction, including **fairer and more equitable** student learning assessment practices.

The content presented in this document provides a summary of a much broader subject. ***Appendix A*** presents a brief recap of the nomenclature proposed in this guide, illustrating at a glance the different levels of program and course planning. The hope is that the principles, considerations, and examples presented in this guide will be helpful to the academic staff (faculty and administrators) in their respective duties. It is important for us, in all our institutions, to continue to offer high quality programs and an outstanding educational experience for our students. Quality learning starts with clear and concise planning!

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Appendix A
Nomenclature for Program and Course Development and Planning

Program goal

General statement of intent and direction that explains one or more objectives of the program.

Verbs: develop, educate, become familiar with, be aware, initiate, acquire, broaden, etc.

General learning outcome of a program

The purpose of the learning outcome of a program is to clarify the *internal and lasting changes* following program of instruction. The general outcomes of a program provide a direction with respect to the areas of learning to be developed by the end of a program.

Verbs: know, understand, apply, analyze, evaluate, etc. (See Table 2, p. 3.)

General learning outcome of a course

The purpose of a learning outcome of a course is to specify the *internal and lasting changes* by the end of a course. The general outcomes of a course provide a direction with respect to the areas of learning to be developed by the end of a course.

Verbs: know, understand, apply, analyze, evaluate, etc. (See Table 2, p. 3.)

Specific outcome of a course

Specific outcomes relate content to ability by formulating as precisely as possible the knowledge, skills and abilities that a learner must acquire or improve during or by the end of a learning situation. This *external manifestations* must be easily observable.

Verbs (action): list, describe, summarize, establish, justify, etc. (See Table 2, p. 3.)