

**Degree IN TEACHER OF PRIMARY
EDUCATION.**

**Subject: Didactics of Experimental
Sciences**

Course: 17-18

Chapter 6. Evaluation

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6.1. Evaluation of student learning and the teaching process

According to the Dictionary of the Royal Spanish Academy (RAE), the word evaluation, derived from the french word *évaluer*, has several meanings:

1. Point out the value of something.
2. Estimate, appreciate, and calculate the value of something.
3. Estimate the knowledge, skills and performance of students.

It is, therefore, in the latter where the educational meaning of the evaluation is recognized. In fact, the RAE gives the term much more than estimating the knowledge, skills and performance of students, and adds some connotations derived from the social value that this estimation of knowledge and student performance, which is one of the key elements of curriculum development. Obviously, it cannot be said that it is the most important, but what is certain is that the evaluation cannot be, or better said, should not be considered exclusively at the end of the curriculum development process, as is generally done.

The first question which we can pose is referred to the need to carry out the evaluation, but, in reality, we need to the reasons to do it and when is going to be place. In that sense, we can establish two main aspects to summarize:

❖ Learning and teaching involve evaluation

The evaluation must not only measure the results but it also conditions what is taught and what and how the students learn. Therefore, it is necessary to consider evaluation as part of the teaching-learning process (Sanmartí, 2011).

❖ To learn, it is necessary to identify errors.

To learn, it is necessary to identify errors and difficulties in the ways of thinking, understand their causes and make decisions about the best way to overcome them, that is, to learn it is necessary to self-evaluate. We can remember this sentence: “from mistakes it is learned”, but this learning is not only due to the fact of making mistakes, but to reflect on them.

The difficulties and the mistakes of the boys and girls come fundamentally from their previous ideas, fruit of the way they perceive the phenomena. These alternative ideas are in many cases difficult to overcome. The challenge for teachers is that when students perform teaching-learning activities, recognize the causes of the differences between what is proposed to learn and their own ideas and, from there, help you overcome the obstacles you encounter when looking for ways to reduce differences.

Several studies provide evidence that a thorough review of the evaluation leads to significant improvements in learning outcomes, especially in students who have difficulty learning.

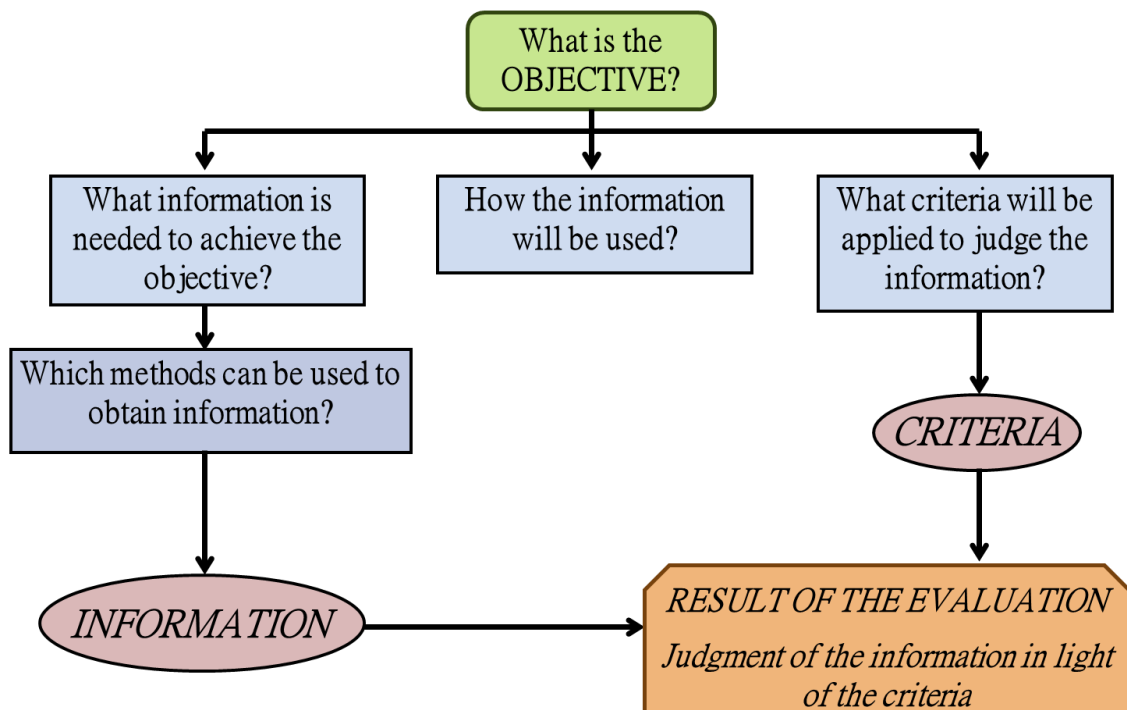
According to Harlen (1998), the concept of evaluation can be expressed as:

Evaluation “is the process of obtaining and using information to help make decisions or make judgments.”

In that sense, the evaluation involves making value judgments about what information is relevant in order to make decisions and decide which criteria should be used to obtain and judge the information obtained. The distinction between information and the criteria used to judge it is important, even if both are connected. The fact of highlighting the criteria on which the judgment is based clearly distinguishes the evaluation of the simple opinion. However, evaluation is not a process independent of the values that some have assumed and others would like it to be.

The selection of criteria, the type of information and the way in which both relate influence the judgment that is made. In fact, we can say that understanding the character and limitations of evaluation are essential with respect to its usefulness. The naive assumptions about what the evaluation can achieve or the trust that can be deposited in the results should be avoided. If this is done, evaluation will have an important role to play in the many decisions that must be made in teaching,

All these aspects can be summarized in what is called: **the evaluation process**; in which, it is involved to pose a series of questions and take the corresponded decisions. This process can be schemed as:



As we have said, the evaluation involves collecting certain pertinent information for a decision to be made and to judge it in relation to the appropriate criteria. Therefore, the information that is collected and the criteria that are used will depend, in part, on the objective of the evaluation.

The set of objectives that can include evaluation in education is extensive, even if we limit ourselves to the evaluation of a single school, including some objectives that have a direct effect on the school and another whose direct impact is minor.

6.2. Evaluative Models

Evaluation is a complex process conceived in different ways by the teachers. In that sense, generally, there are two main ways to evaluate:

Traditional { • It pursues the quantitative control of student learning, valuing the final product, ignoring the process

School Research Didactic Model { • It proposes an evaluation that regulates the teaching-learning process and allows to adjust it. A learning tool and an element that allows proposing improvements during the process

As we have said, we can point out two main models for evaluation, which we will detail in relation to different important aspects.

Traditional Evaluation

In relation to *the students and the evaluation*:

- ❖ Students must not intervene directly in the evaluation of their class activity
- ❖ The correction of an exam must be done by the teacher without knowing the author to avoid influences in the qualification.

In relation to *the meaning of the evaluation*:

- ❖ The evaluation is necessary, fundamentally, to decide on the promotion of the student
- ❖ Students, when they are able to respond correctly to the questions raised by the teacher in the evaluation, show that they have learned
- ❖ The level that students must reach at the time of the evaluation is set in the teacher's program.

In relation to **what is evaluated**:

- ❖ The evaluation of the students must focus on the essential scientific learning, and these are those related to the understanding of the concepts

- ❖ The evaluation should focus on measuring the level reached by the students with respect to the intended objectives.

In relation to **evaluation instruments**:

- ❖ The basic and most reliable instrument for the evaluation of learning is the written exam

School Research Didactic Model

In relation to *the students and the evaluation*:

- ❖ Students must be evaluated positively if there is a significant evolution of their own ideas even if they do not reach the most appropriate formulation

In relation to *the meaning of the evaluation*:

- ❖ The evaluation should concern both learning and teaching
- ❖ The evaluation is a basic instrument to understand and improve the teaching-learning processes

In relation to **what is evaluated**:

- ❖ When students are evaluated, the learning of procedures and attitudes as well as concepts must be considered.

In relation to **evaluation instruments**:

- ❖ The evaluation should use the maximum possible number of instruments (class notebooks, participation records, laboratory work, self-evaluation reports, etc ...)
- ❖ Evaluation instruments should be prepared to evaluate the students, the teacher, and the teaching.

In summary, the evaluation should be understood from this second perspective or model, which is, as a basically evaluative and research activity that should affect not only the learning processes of the students, but also the teaching processes developed by the teachers.

The evaluation, therefore, must address not only the final product ("the grade") but also the processes that occur in the classroom. Thus, a terminal and finalist evaluation raised outside the rest of the elements that make up the curriculum do not seem to be very formative.

6.3. Types of evaluation of student learning

There are different types of evaluation depending on:

➤ **The moment of the evaluation**

We can consider three phases:

Initial evaluation (also called diagnostic): It is understood that it is carried out at the beginning of the educational process to detect the initial ideas of the students.

Formative evaluation (also called procedural): It is developed throughout the teaching and learning process and functions as a regulating element of the process, favoring the construction of knowledge by the students, and it becomes an important element of learning help.

Summative and final evaluation: It is usually carried out at the end of the process and what is usually done is an average of the data obtained from the students through the instruments that have been used.

➤ **Reasons and contents to be evaluated (what and for what to evaluate)**

Focusing on the previous phases, we can establish several aspects:

Initial or Diagnostic Evaluation	
What is evaluated?	What is it evaluated for?
Ideas or previous knowledge	Adapt the teaching proposal to the ideas and interests of the students
Reasoning and spontaneous strategies of the students	Students become aware of their starting point
How they elaborate and construct the proposed tasks	

Formative or Procedural Evaluation	
What is evaluated?	What is it evaluated for?
Reasoning and strategies of the students	As positive reinforcement for student learning
Difficulties and obstacles in learning knowledge	As a follow-up of the student learning process
Evolution of the ideas of the students	As a regulating element of the teaching-learning process
	To adjust the teaching process to the learning process

Summative and final Evaluation	
What is evaluated?	What is it evaluated for?
Knowledge acquisition Acquisition of strategies and processes	Take stock of the various results obtained by students Integrate all available information about the learning process of students Support decision making in the face of student orientation

6.4. Evaluation as a regulation of learning

Every learning activity requires a process of self-regulation that is, overcoming difficulties and correcting errors based on understanding their causes.

It is not easy to learn to self-regulate. Time is required (many students take a course or more to understand how to anticipate the action and its importance). They consider that the errors are mainly due to "distractions", and they have difficulty recognizing that they have not dedicated the necessary time to plan the action (they perform the task without anticipating the possible ways of carrying it out).

And it is also difficult for them to change the "rules of the game" they are accustomed to apply to pass, such as copying from others or memorizing from the textbook, hiding and disguising mistakes and difficulties, or competing before they cooperate. Only the students who are able to recognize where their obstacles are and know how to find ways to overcome them are those who are successful learning. In order to recognize their obstacles, they must become aware of what they do not know and reflect on it.

The challenge of those we teach is to get those who learn to understand that, if you do not reveal what you do not know, no one can help you overcome the obstacles you encounter when learning. As an example, a class journal can be a good evaluation-regulation activity because it allows to the students to reflect on their successes and difficulties and, also, to the teachers to obtain useful information to help them in their learning.

6.5. Evaluation as a verification of the learning

Also, one of the purpose of the evaluation should be the fact to verify the learning of the students, in other words, the evaluation has the purpose of knowing about what is learning for. In fact, during the evaluation process, we have to check if the objectives have been reached, but also, we need to identify what is still to be learned.

In fact, as a teachers, our task is qualify and credit the results, but this point should be done, not only to reach the typical final mark given to the students (as the traditional model) but also that it should be used to check our own teaching process.

To finish, we can consider two important aspects used to verify the learning according to the law, namely, **evaluation criteria** and **evaluable learning standards**. So, according to the current law of Primary Education:

Evaluation Criteria

- Degree of acquisition of competences and achievement of the objectives of each teaching and educational stage: they are evaluation references that define what is wanted to value, what students must achieve, both in terms of concepts and procedures and attitudes. They respond directly to what is intended to achieve with the subject.

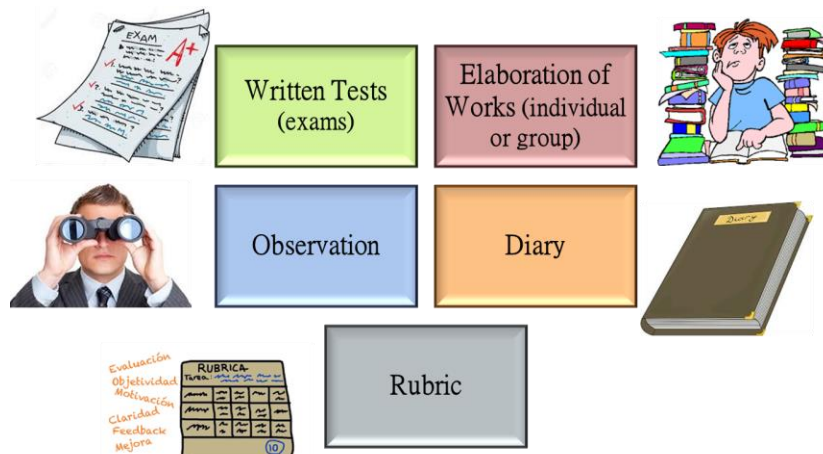
Evaluable Learning Standards

- Concretions of the evaluation criteria that allow defining the results of the learning and specify through actions what the student should know and know how to do in each subject. They should allow to grade the performance or achievement achieved. They have to be observable, measurable and evaluable since they contribute and facilitate the design of standardized and comparable tests

6.6. Evaluation Instruments

In order to apply evaluation criteria and that this can be carried out, it is necessary to have instruments that provide data and information about the process of construction of knowledge by students and that also provide information about the teaching process. Each of these instruments provides valid information for a global assessment of the student and the teaching-learning process.

Below are several evaluation tools that allow the collection of information in a systematic way:



6.7. References

HARLEN, W., 1998. *Enseñanza y aprendizaje de las ciencias*. 2ª Edición actualizada. MEC/Morata. Madrid.

PERRENEUD

RIVERO-GARCIA, A. et al., 2017. *Didáctica de las Ciencias Experimentales en Educación Primaria*. Editorial Síntesis. Madrid

SANMARTÍ, N. 2011. Evaluar para aprender, evaluar para calificar. Capítulo 9 en CAAMAÑO, A. (coord.) *Didáctica de las Física y la Química*. Barcelona: Graó, 193-2014.