

## Ethics in school evaluation: assessment as an educational tool

Paolo Martena

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**Abstract.** *This article analyses the theme of evaluation in schools and its importance for the global growth of students.*

*The process of evaluation is not only an obligation which the teacher must carry out but also an important instrument which guides and enriches their teaching. It has great ethical significance because the teacher, must use evaluation as a means to understand the students' strengths and weaknesses and consequently guide choices made to render their teaching fruitful.*

*In the first part of the article different types of evaluation are listed and the modern evaluation for competences is analysed in particular.*

*In this type of teaching the teacher is only a director of situations and a cultural mediator who evaluates how the students prepare themselves to face up to real life tasks.*

*European school policy has encouraged the objective of lessening the gap between school and the workplace of the real world.*

*Evaluation in mathematics has been the subject of much attention. Indeed, it is believed that there is an important correlation between poor results in this subject and their fear of being tested.*

*An initial survey on the fear of Maths and on school in general is proposed as solution to this.*

*Finally, attention is brought to the fact that in order to carry out an individual global evaluation which encourages growth, culturally, morally and relationally, teamwork on the part of the teachers is essential.*

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**Sommario.** *In questo articolo è stato analizzato il tema della valutazione scolastica e della sua importanza per l'evoluzione globale degli alunni.*

*Il processo di valutazione non è solo un obbligo cui l'insegnante deve assolvere, ma un importante strumento di lavoro che arricchisce e indirizza la sua didattica. Essa ha anche un grande significato etico perché l'insegnante, libero da qualsiasi condizionamento interiore o esterno, deve usare la valutazione come un mezzo per comprendere gli alunni nei loro punti di forza e di debolezza e, di conseguenza, per indirizzare la sua azione didattica e renderla fruttuosa.*

*Nella prima parte dell'articolo, sono elencate le diverse tipologie di valutazione ed è analizzata, con particolare attenzione, la moderna valutazione per competenze.*

*In questo modello didattico, il docente è solo un regista di situazioni e un mediatore culturale che valuta come gli alunni si predispongono nell'affrontare compiti di realtà, le strategie cognitive che usano e i risultati che ottengono.*

*La politica scolastica europea, che mira a sanare la frattura tra il mondo della scuola e quello del lavoro, indirizza verso azioni didattico – educative di questo tipo.*

*In questo lavoro è stata posta molta attenzione anche sulla valutazione in matematica. Si ritiene, infatti, che ci sia un'importante correlazione fra gli scarsi risultati degli alunni in questa disciplina e la loro ansia da prova.*

*Si propone, a questo scopo, agli insegnanti di condurre indagini preliminari sulla paura della matematica e su quella della scuola, in generale. Il docente dovrebbe aver cura di interpretare i risultati ottenuti per di indirizzare la sua azione didattica e realizzare una valutazione più completa.*

*Infine, si pone l'accento sul fatto che, per effettuare una valutazione olistica, che costituisca un'utile strumento di crescita sia culturale che morale e relazionale degli studenti, sia indispensabile il lavoro d'equipe fra gli insegnanti.*

**Parole chiave.** *Ethical evaluation, Life skills evaluation, evaluation taxonomy, Math's evaluation*

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## Introduction

In this article the author analyses the different forms of school evaluation with a focus on the evaluation of both Life skills and Mathematics. The evaluation is considered, not only as a teaching tool, but also as a valuable educational instrument, essential in the ethical training of students which will benefit the entire society.

## Ethical meaning of evaluation

The verb *to evaluate* can be used in many different contexts: ethical, political, civic education ones. In all these cases, the Latin origin of the word means giving a value must not be forgotten.

The assignment of a value cannot occur, however, in an objective way; it always depends on the subjectivity and the social conventions. The analysis of some situations, in fact, changes greatly depending on the context in which they happen.

Homosexuality, for example, was for centuries considered a disease or a serious sin. Today is assessed a decent choice for some States, while for others it is an anomaly or even worse, a crime. The opinion regarding this theme also changes a lot from person to person, even inside the same social group.

In contemporary pedagogy and teaching, the concept of evaluation has undergone a profound change.

The evaluation loses, therefore, its value punitive and becomes a tool to facilitate the learning of pupils. (Zavalloni, 1967).

A great difference exists between expressing judgement on a piece of work and using the evaluation as a teaching instrument.

Evaluation can become an important moment of growth for teachers and students alike, through which they can understand their weak strong and weak points and if necessary make changes to strategies used.

Various types of evaluation exist which permit teachers to observe students in different moments over the course of their studies.

Each one of these, if used by the educator in a fair and careful way, is of the same importance.

If the teacher, as a professional who continually reflects, gives the evaluation the correct value they will take advantage of the different types of evaluation.

This will enable the students to change their point of view and see the teachers as allies and as a reference point for their personal and cultural growth.

Evaluation can also be a way in which to bring the students closer to society and the workplace. Evaluation of competences, for example, is of great social value, because it aims to evaluate the cultural, professional, personal and cognitive abilities which the students will have to use over the course of their lives.

Finally, it would seem to be common sense to use evaluation of mathematical competences as an instrument to bring students closer to the subject. Evaluation can be an occasion for students to confront their fears and difficulties in order to develop their personalities and widen their cultural knowledge.

### For a full evaluation at school

There are different types of tests that students may be subjected: predictive tests, formative tests, summative tests, testing for certified, authentic testing (Life skills education).

To encourage the learning of the students have to create a learning environment in which they can build their knowledge and develop their skills by working in collaborative groups. Only through constructive relationship with peers, they can activate their *zone of proximal development* (Vygotsky, 1939).

We find the premises of these concepts in the Russian psychology and, particularly, in the jobs of Vygotsky (1939).

According to these theories, the learning is a social education, that happens through the social construction before and, subsequently, through the progressive transfer of the external social activity, through signs, to the inside control; an example of this trial is the learning of the language before is listened and included and, only in a second moment, acquired.

To optimize this trial is necessary that in class a positive climate is established. The teacher should hold a democratic attitude, sincere, from positive leader, should be a point of available reference to the active listening and the help and should hold a director attitude of the activity, whose actors are the students. The teacher is an organizer of communicative situations for the learning and a cultural mediator. (Wraga, W.D.,1998).

Testing for certified means assessing achievements, but in reference to a macro context with the aim of acquiring a title that can be used in accordance with the law, as the degree, for example. The predictive tests are proposed at the beginning of the educational path, namely the beginning of a school year or a course of study. They are used to determine the starting level of the students and identifies possible misconceptions. It is an indispensable tool for the teacher in the planning of educational intervention.

The formative assessments are administered during the teaching activities and are designed to understand the level of understanding of the subject by students and to improve the work of the teacher.

The summative verifications are administered at the end of the topic and serve to measure what has been learned and to give a vote or a judgment that influences the student's career.

The objectives that are assessed are usually classified, by teachers, according to a hierarchical order: from the basic to the more advanced, to enable all pupils to start their work with serenity.

Anderson and Krathwhol (2001), for example, have taken as reference the previous taxonomy of Bloom, but amended it, giving more importance to the strategies of thought rather than the results.

According to them, goals that need to be investigated are six:

- *Remember*: that means recall information;
- *Understand*: explain idea or concept;
- *Apply*: use information;
- *Analyze*: distinguish between different aspects;
- *Evaluate*: justify own point of view;
- *Create*: creating own ideas.

The teacher who prepares the test must take care to prepare exercises that explore the objectives that have been set.

## The Life skills teaching and its evaluation

It is usual for us, teachers and educators, in general to distinguish the pupils that have a good scholastic output from those that have a discreet output or poor straight, but they manifest only their abilities and their creativeness in the daily life.

Castoldi (2008) searches the cause in the typology of traditional teaching. He distinguishes among two macro models of teaching:

- The direct model or transmitted (“wall teaching”): in which the student is considered only an inactive knowledge fruit of the simplification of the reality;
- The indirect (“bridge teaching”) model: in which the pupil is in the center of the teaching and the role of the teacher is only that to create situations to hoc that really allows an effective and spendable learning the real world.

This new idea of teaching is on the center of the ultramodern Life skills teaching, of constructivism matrix.

The concept of skills is very complex and it has had a long evolution during the time, which will be discussed in the next section. (Castoldi, 2010).

In the last ten Fifteen years have taken, start as prosecution of the Cognitivism, the seams of pedagogic study of the constructivism and social Constructivism. According to these theories, the process of learning is effective only if it has as principal characteristic to be constructive, that is means “to reconstruct” what the subject already possesses: all the reception incentives from the outside enter the mind of the individual and they are laced to previous knowledge to build new knowledge.

The learning has, as construction, double nature:

- Relational: in relationship with the real world and with the social context;
- Dynamics: because it derives from the mobilization of previous knowledge.

Bruner (1986) speaks of a spiral learning that possesses three principal characteristics:

- Constructive;
- Social cultural: the social and cultural context is the theater where knowledge is produced;
- Situated: or tied up to the content and the context that produce it.

From these psycho - pedagogic theories, the concept of skill is born.

The first definitions of skill recall behaviorist vision, according to which it is identified with a performance of the observable and measurable subject. In practice, the concept of skill with coincided with the concept of ability.

In the following years, we assist to a progressive articulation of the concept that we can synthesize in three evolutionary directions (Castoldi, 2010):

- From the simple one to the complex: competence is considered as integration of the individual resources;
- From the outside to the inside: it affirms a progressive attention to the inside dimension of the not referable subject and not only to observable behaviors. In this optics, it places the Chomski's distinction among skill, as inside quality to the subject, and performance, agreement as observable behavior;
- From the abstract to the situated one: skill is appraised in base to the ability to face real assignments in specific social, cultural and operational contexts.

In effective way, Le Boterf (1994) reassumes the course that the concept of skill countersigned in *"the passage to know, to know how to be, to know how to act"*, understood as synthesis among to know how to do and to know how to be, mobilized in operation of a problematic situation.

## The Life skills and the International Organizations

Also the programmatic lines of the International Organizations push toward this Copernican revolution of the education that puts to the center the learning, understood as acquisition of Life skills.

Already in 1993, the WHO (World Health Organization) invited the formative agencies to make a formation able to equip the young people to face the difficulties in the life. These appeals are also received by the White Books of the European Commission. The second White Book (Cresson Flyun 1995), particularly, refers to one "cognitive society", that is endowed with that organized Knowledge essential to "stir in the world".

The "Key Competencies for a Successful Life and a Well-Functioning Society" final report of the DE.SE.CO search, 2003, defines the skills as a constellation and search the key - skills, valid for every sector of the knowledge. It substantially individualizes three Key skills:

- To interact in heterogeneous social groups;
- To autonomously act;
- To use tools in interactive way.

In the document "Recommendation 2006/962/CE of the European Parliament and of the Suggestion, of December 18th 2006, related to competences key for the permanent learning" [official Newspaper L 394 of the 30.12.2006, pag. 10] are individualized eight key-competences

The Key competences for the permanent learning they are a combination of knowledge, ability and appropriate attitudes to the context. Particularly, they are necessary for the personal realization and development, the active citizenship, the social inclusion and the occupation. The competence keys are essential in a society of the knowledge and they assure great flexibility to the workers to adapt in more rapid way to a world in continuous change and more interconnected. Besides, such competences are a factor of primary importance for the

innovation, the productivity and the competitiveness and they contribute to the motivation and the satisfaction of the workers and the quality of the job. The key skills must be acquired by:

- young people at the end of their cycle of compulsory education and formation, to prepare them to the adult life, above all to the working life, forming, at the same time, a base for the future learning;
- adults in the whole arc of their life, through a process of development and updating of their abilities.

The key competences for lifelong learning individualized are:

- The communication in the mother tongue;
- The communication in the foreign languages;
- The mathematical competence;
- The digital competence;
- Learning to learn;
- Social and civic competence;
- The sense of initiative and entrepreneurship;
- Cultural Awareness and expression.

What is the role of the teacher in the didactics for competences?

- He/She observes the class system;
- He/She designs with the colleagues the activities aimed to the acquisition of life skills. These activities must be challenging situations, drawn by the reality;
- He/She proposes the activities to the pupils and he observes them during the job, he/she annotates their reflections;
- Ago so that the pupils share with the classmates what they have learned and he drives this sharing, correcting possible errors, motivating and stimulating the students;
- He appraises the acquisition of the life skills. Before the beginning of the activities the teacher establishes the criteria of evaluation and words an index book valuation. The evaluation owes tend account, not only of the gotten results, but also of the motivation, of the approach to the situation problem and of the ability to work in group.

During the observation of classroom activities, the teacher compiles an evaluation rubric with which expresses the judgment as to the achievement of skills by pupils.

Table (see Table 1) is an example of an evaluation rubric in which it assesses the key skills: sense of initiative and entrepreneurship.

A table of this type can be used, such as for school projects that involve the local community: organization of events, festivals, markets, conferences, etc.

**Table 1: Evaluation rubric**

	Partial	Acceptable	Intermediate	Advance
Understanding of the task	He/she needs to be driven to gather the sense and the objectives of the projected action.	He/she has clear the general sense of the projected action and the essential objectives.	He/she has clear the sense and the objectives of the projected action.	He/ she has clear the sense and the objectives of the projected action and it is prefigured the route of the project.
Planning of the strategies	He/she labors to individualize the	He/she individualizes the	He/she individualizes the	He/she individualizes and it autonomously plans the

of action	fundamental steps of the route of the project and to direct the action.	fundamental steps of the route of the project.	steps of the route of the project and its own direct action and own operation in strategies of theirs relations.	steps of the route of the project and it directs their own action in operation strategies of their realization.
Control / regulation of the route of the project	He/she labors to hold under control the passages of the route of the project and to see the run again.	Is available and in degree of monitoring and to hold under control the essential passages of route of the project	He/she is available and in degree of monitoring and to hold under control the route of project, re - directing, if necessary, the run.	He/she is available and in degree of monitoring and to hold under control the route of the project, verifying the coherence of it with the objectives and re - directing, if necessary, the run.
Social interaction	He/she has needed to be motivated and solicited to participate in the activities and to undertake in initiatives and common projects.	He/she participates in the activities but work to assume a purposeful role and to assume initiatives.	He/she participates in the activities with constructive attitude and spirit of initiative and availability to the search and the action.	He/she is motivated and it participates in the activities with constructive spirit, spirit of initiative and availability to the search and the action. And open to the dialogue, to the comparison and the sharing of knowledge, competences and resources for the realization of common projects.
Sensibility to the context	He/she must be stimulates to seek and to analyze useful information to the knowledge and the understanding of the context of action and to use her.	He/she search and it analyzes useful information to the knowledge and the understanding of the context of action and functional.	He/she search and He/he analyzes useful information to the knowledge and the understanding of the context of action using to define her objectives and lines of action.	He/she search and He/she analyzes critically useful information to the knowledge and the understanding of the context of action, using to define her objective meaningful and functional lines of action.

This variety of evaluation strategies and in particular formative assessment and life skills evaluation have high ethical and educational value. In fact, they allow students to increase their capacity of self-assessment that are indispensable for their real life. Therefore, these assessments can be rightly defined as assessments for learning (Black & Wiliam, 1998).

In practice, however, some empirical studies demonstrate that the evaluation practices used by teachers often are more discretionary, subjective and therefore unreliable (Poham, 1975; Domenici, 2007b; Webb & Jones, 2009).

### Evaluation in Mathematics

The topic of assessment in mathematics has always been very popular among those who deal with it. It is thought that a poor evaluation further demotivates student's study of the subject,

which is very complex for the majority of students.

Anxiety about mathematics can have various origins (Ashcraft, Kirk E., Hopko, 1998)

- Objective difficulties of comprehension;
- Difficulties related to abstraction and categorization;
- Consignment not within the student's ability;
- Teacher's attitude;
- Excessive expectations on the part of the family;
- Limited self esteem.

This last aspect, in particular, pushes students to feel they are not up to the task. Students can thus believe that their results are not proportional to their efforts. This leads them to not complete with determination tests taken, to give random answers or even to hand in blank tests. For this reason, it is possible a negative evaluation can hinder a student's motivation and trigger a vicious cycle: poor results – demotivation about the subject – lack of application to the subject.

Indeed, some studies have shown that anxiety about mathematics is not the simple consequence of cognitive difficulties, as it can also be identified in students without particular difficulties.

Before any school assessment, therefore, it would be very useful for teachers to analyze to what extent anxiety affects the performance of their students.

A deciding turnaround regarding this was the publication of the MARS (Mathematics Anxiety Rating Scale) questionnaire and the successive variations (Plake, Parker, 1982).

The original questionnaire contains 98 items, but has been adapted to different situations and age ranges.

Teachers can choose to use only some items or to create new ones, using those which are most significant to the task in hand for them. (from their point of view)

The tests require the student to consider certain situations connected to the teaching of mathematics and to express their state of agitation by way of a point system, 1-4.

The points obtained from each point are added in order to obtain a total score and to permit an evaluation.

The original 98 questions of the Mars questionnaire may be too many for a middle school or the first years of a high school. Furthermore they may discourage students with difficulties in reading or comprehension.

In line with the questionnaire for middle schools (Saccani e Cornoldi, 2005) the items could be classified in three groups:

- Anxiety regarding mathematical acquisition
- Anxiety regarding evaluation of mathematics
- Anxiety regarding school in general.

In the first group the following situations can be found:

- To follow an explanation of mathematics
- To buy a maths book
- To start a maths lesson
- To understand a graph
- To read a formula of geometry

- To understand the relationship between a formula and a physical phenomenon
- To apply a formula of geometry
- To calculate a percentage.

It is not difficult to find items to assess anxiety due the evaluation of mathematics:

- To have to do very difficult homework at home;
- The thought of a math's test set for the next day;
- Being asked to resolve an equation during an oral test;
- Being asked a geometry question during an oral test
- To take a math's exam at the end of the Middle school;
- To get the lowest mark of all the students in a test;
- To have to tell marks obtained in Maths to parents;
- To get 4/10 in a Maths test.

The third group of questions refer to anxiety connected to school in general. It is important to distinguish between the fear of mathematics and the distress that can be present in a school environment.

Examples of this could be:

- To answer end of unit geography questions;
- To read sheet music;
- To wait ones turn on the bench during a school football match;
- To play a song on a recorder;
- To prepare for a school trip;
- To ask a teacher for an explanation;
- To ask janitor for information;
- To deal with the presence in class of the strictest teacher.

In order for this type of survey to be functional, it must be carried out in such a way that the students can answer with serenity.

The teacher should explain that the questionnaire aims to better understand their difficulties and to find valid solutions together.

The questionnaire should be designed by the teacher to recreate possible situations from the daily routine of the students.

It would not make sense, for instance, to ask students from the first year of middle school if they are worried about solving an equation, due to the fact that this is usually dealt with in the third year. Likewise, to ask if a swimming competition might cause anxiety if the school does not actually take part in such events.

Care should be taken with the time at which the questionnaire is administered.

They should be spread out in order to let the students mentally recreate and temporarily relive each situation.

For the same reason, it is essential there is silence while it is being completed in order not to hinder concentration.

Soft background music could be played to create a relaxing atmosphere.

Every teacher must of course make the choices best suited to the class in question.

Particular care should be paid to the layout of the questionnaire. The questions must not be bunched together and the graphics should be captivating.

After data analysis has been done, the teacher could then create specific handouts which require each student to reflect on the situations and the reasons which cause the anxiety, on how much they may affect performance and productivity. Also strategies on how to deal with the problems should be considered.

A final stage could be a class discussion where the students are encouraged to share their own experiences and strategies used.

During the discussion, the students can come to understand that the fear of mathematics is an experience that they have in common, that they are understood by the teacher and classmates and receive advice regarding possible solutions.

The teacher may also decide to use a similar questionnaire at the end of the year in order to note any evolution that has taken place during the school year.

It is without doubt that this type of questionnaire is useful not only to make the students aware of their difficulties but also to guide the teacher in educational choices made.

As a reflective professional, the teacher must be flexible and adapt educational choices to the needs of the students, in order to minimize critical situations, to increase their motivation and their sense of self-efficacy.

This will lead to an ethically correct, precise and constant evaluation which takes into consideration not only targets reached but also the growth of the students as human beings.

### **The team work and its ethical role in the evaluation**

For centuries, criteria that make the evaluation more objective are sought to increase its educational effectiveness. However, the personality and the educational choices of the teacher influence the evaluation of pupils highly.

The halo effect, for example, occurs when a teacher who appreciates a particular characteristic, for example the logic capacity, is influenced, often unconsciously, to evaluate other aspects and indicators.

The Pygmalion effect is another source of serious evaluation errors. The teacher, in fact, can have positive or negative prejudices about the abilities and commitment of the student. These biases affect the attitude of the teacher and this greatly affects the performance of the pupil triggering a vicious, sometimes virtuous, sometimes vicious, but always unethical.

Finally, the stereo effect, leads the teacher to think that the educational and cultural situation of the student cannot change. This false belief prevents the optimization of teaching and educational strategies (Booth, 1978).

The only way to avoid these risks, offsetting the educational benefits of the evaluation, is the teamwork. The working group, in fact, allows a more complete view of the capacity, the knowledge and the skills of the pupil.

A professional team also undertakes to correct the errors of each of its members. This is done in a correct and productive way only if teachers establish correct relationships and create a serene environment of professional growth and sharing.

### **Conclusion**

To this day it does not seem that evaluation is given the due importance it has for the growth of the individual and the progress of society.

In particular, the great ethical value of evaluation by teachers and its importance to society must be highlighted.

By evaluating teachers can help students to overcome their weaknesses, and place importance on their strong points whilst working with others with respect and enthusiasm.

Multiple forms of evaluation must be used in order to achieve these ambitious objectives.

Particular care must be paid to evaluation in mathematics, which has always been a subject met with trepidation by students.

Teachers cannot help but identify any existing fears in order that these become moments of reflection and growth.

The modern evaluation of competences would appear to be of particular use. To carry these out students must be confronted with real life difficulties.

By carrying out a real task, they are able to understand the importance of teamwork.

The group is not just a value for students but also for teachers, who by way of comparison with their work group, can grow professionally. By discussing the students in order to have a complete and objective vision they are able to evaluate with greater efficiency.

## Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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*Received February 28, 2016; revised March 11, 2016; accepted March 26, 2016*

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