

## EVALUATING TRAINING OUTCOMES: SOME REFLECTIONS ON AN ONLINE AND IN PRESENCE MODALITY

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**Abstract:** *The paper offers a discussion about the concept of training from a psychological point of view. In a life-long learning perspective adults' training is developing relevant. Innovative technologies and methodologies demonstrate to be very needful to answer to new learning requests, and this is also because requests mainly come from workers. Even Universities are restyling their paths, organizing online courses in addition to traditional classes. But is it possible to do e-training? And, if possible, in which way the assessment has to be conducted? A study case is provided to deal with these questions.*

**Key words:** *learning design, life-long learning, assessment, self assessment.*

### 1. Introduction

According to the objectivist point of view, *knowledge consists in correctly conceptualizing and categorizing things in the world and grasping the objective connection among those things and those categories* (Lakoff, 1987, p. 163). So there is only one correct possibility to reach this kind of correspondence and only one correct understanding of any topic (Vrasidas, 2000). In this framework the work of learners consists in the achievement of the correspondence between abstract symbols and real world. Evaluation is goal-driven (Jonassen, 1992a) and it can be very similar to a paper and pencil test (Bennet, 1998): trainers ask students to make a activity, then the answers can be compared to a correct model by teachers or students themselves. This is a quite easy way to do an evaluation and also a self-evaluation. There are also software able to provide this

kind of assessment, both in presence and in online experiences (Rafaeli & Tractinsky, 1989; 1991; Rafaeli, Barak, Dan-Gur & Toch, 2003).

On the contrary, in a constructivist perspective, the world is mostly created by the human mind (Piaget, 1970) so that knowledge is mainly considered as an interpretive process (Kuhn, 1996). In addition, in socio-constructivist approaches knowledge is considered the result of *construction of meaning* and *negotiation* that happens within social exchanges (Bruner, 1990), so that teaching is not just a simple transfer of information, but an active building of data and understanding situated within authentic relationships and activities (Scardamalia & Bereiter, 2002). *As there is not one correct understanding and there is not one correct way of solving problem* (Vrasidas, 2000, p. 10), the exclusive use of testing is clearly not adequate to individuate this kind of

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learning achievements (Lesh & Doerr, 2003; Sternberg 1997). Constructivist and socio-constructivist teachers allow learners to have an active role along the whole training path and in the evaluation process (Jonassen, 1992b). *Evaluation of one's own work promotes self-reflexive processes, which is another goal of constructivist learning* (Vrasidas, 2000, p. 12). Self-regulation is also enhanced by peer interactions.

## 2. Training: Towards a Definition

According to socio-constructivist theories, we assume learning as an outcome of social interactions, both disagreeing and concerted (Doise & Mugny, 1981; Pontecorvo, 1993; Carugati & Selleri, 2001). In this approach, teaching is mainly regarded as an activity of scaffolding offered to students to facilitate an active and self directed learning (Scardamalia & Bereiter, 2002). It means at least to start with any concept or knowledge is already available for students and to facilitate a better form or re-organization of concepts. The basic role of prior knowledge in training process is evident: trainers have to deal with previous opinions, ideas and judgments of the trainees to promote new understanding. Training can be considered not a simple grow of information, but a real cognitive and affective conceptual change (Mason, 2001; Mason, 2006). The new contents have to be translated in individual competence, what permits to learners an adequate application and creative use of knowledge and expertise (Gardner, 1991). The change can be achieved only on the base of direct experience and a subsequent reflection (Bion, 1961; Knowles, 1986; Arfelli Galli, 1997; Brusaglioni, 2002).

We followed the socio-constructivist assumptions in different versions of the same course, the Workshop for observing children at school. We now intend to

illustrate and discuss this model, to provide a study case.

## 3. A Case Study: the Workshop for Observing Children at School

The Workshop for Observing Children at School is an obligate formative course at the University of Macerata. It is addressed to students that will be teachers in their professional future. Assuming observation as a specific competence required to teachers, the Workshop is finalized to train skills in observation method. In fact teachers are supposed to adopt an expert approach when observing learners at school.

### 3.1. The Educational Design of the Workshop for Observing Children at School

The Workshop consists of a system of progressive proposals, both subjective and collective. The online version of the Workshop is articulated in 8 activities related to specific goals. In the first activity the participants have to write their observation text using the video available online. The video reproduces a real school situation, in which some children are building a tower. The video has a duration of 60'. The goal of the first observation activity is to activate knowledge and competences owned by the students before the study of the textbook. The students are then asked to discuss (within the forum in online modality, in face to face interaction in the in presence lessons) about analogies and differences aroused among the individual observation texts (activity 2). The peers' discussion is finalized to recognize differences, limits and errors of the subjective point of view (Chinn & Brewer, 1993). Moreover while the students do argue their divergent point of view to support their own opinions, they are building a new and stronger structure of ideas (Nussbaum & Novick 1982). At this point there are bases to activate a

negotiation of meanings (Bruner, 1990). In fact, in the third activity the students are asked to negotiate a shared list of indicators for child observation, looking for a possible agreement (Doise & Mugny, 1981; Carugati & Selleri, 2001; Pojaghi, 2000). Then the students have to read the recommended books (activity 4). The understanding of scientific theories is supposed to be facilitated by the naïve theories recognition and activation. Another peer discussion (activity 5) provides the possibility to further revise the list of indicators. In the fifth activity the participants have to write a new observation text. The video is similar to the first; it shows two children collecting a puzzle in an infant school. This activity aims to enable the students to experience observation in the light of the just learned concepts. The participants are then invited to speak about the previous activity within their group in a web forum, expressing an assessment on the Workshop and formulating a self-assessment of their own learning process (activity 6). To conclude the curriculum, the students are requested to send a personal dossier (activity 7) composed by written texts of every activity. Collecting and composing a

personal dossier is a further strategy planned to promote considerations and metacognitive attentiveness. It is a way to support self assessment.

The in presence version of the Workshop has the same activities and goals: there are 7 meetings of 2 hours each, along two months time. The only difference is in the third activity, that is replaced with a teacher lesson. The interactions in web forums are substituted with face to face discussions.

### 3.2. The Samples

The online and in presence version of the Workshop developed during the academic years 2007-2008 have quite the same number of participants (125 subjects online, 117 in presence). In both cases the great majority are women, the course was attended by younger students with respect to the online Workshop. Besides in the online course there are a lot of students already graduated, whereas the Workshop in presence is mainly attended by students with a high school degree. The table below shows the characteristics of the participants (Table 1).

*The characteristics of participants* Table 1

	<b>In presence Workshop</b>	<b>Online Workshop</b>
<b>Number of participants</b>	117	125
<b>Year birth range</b>	1966-1986	1956-1985
<b>High school degree</b>	96	30
<b>University degree</b>	21	95
<b>Full time students</b>	98	30
<b>Workers</b>	19	95
<b>Geographic origin</b>	5 South of Italy	68 South of Italy
	110 Centre of Italy	55 Centre of Italy
	0 North of Italy	1 North of Italy
	2 Foreigners	1 Foreign

### 3.3. Training Evaluation

To compare the observation text made by every student at the very beginning of the

course and the text written in the sixth activity can be a possibility to assess the training efficiency. This kind of analysis

has been carried out by two independent researchers by the means of a list of features, as in the following table (Table 2). Using the above indicators we identified three quality level of observation text:

- **Low Quality (LQ):** short and not structured texts, without separation between description and interpretation, characterized by the presence of generalizations, deductions without

argumentations, use of personal point of view as an absolute one;

- **Medium Quality (MQ):** longer and more structured texts, with a better separation between interpretative and descriptive data, the point of view more frequently expressed as relative;
- **High Quality (HQ):** texts which present all or most of the indicators typical of an expert approach.

Examples of observational texts are soon provided.

*Indicators to evaluate the qualitative level of observation texts*

Table 2

Naïve observation text	Expert observation text
<b>Text structure</b>	
Short and free text	Long and structured text (titles, paragraphs, bullet points, tables)
<b>Context</b>	
Absence of information about the focus of attention and the aim of the observation	Presence of information about the focus of attention and the aim of the observation
Absence of personal hypothesis about eventual aims of observation	Presence of personal hypothesis about eventual aims of observation
Mishmash of description and interpretation of data	Separation between description and interpretation of data
Use of daily language and incorrect use of technical language in adequate contexts	Correct use of technical language in adequate contexts
<b>Linguistic expressions</b>	
The text shows generalizations, abstractions, deductions without argumentations, all-encompassing conclusions	The text shows analysis of events and concrete objects with argumentations; conclusions supported by descriptive and concrete elements, with reference to details and intermediate passages
Use of his or her own point of view as an absolute one	Use of his or her own point of view as a relative one
References to unobservable data such as thoughts, feelings, intentions of the observed subject	References to observable data such as actions, language of the observed subject and observer's internal world
Use of impersonal linguistic forms	Use of personal linguistic forms
Absence or deficiency of cognitive verbs	Presence and explicit use of cognitive verbs

### **Example 1: LQ observation text**

*This videotape presents two children playing together with a table, in a free context, in an Infant School. They establish a cooperative atmosphere, both of them are engaged and both are helpful, trying to attain the same*

*result: to put some pieces in the table following a criterion. Actually it seems neither one dominates the other, although there is always a leader in every situation, in this case the child who adds the toy pieces. This kind of playing expresses cooperative intelligence, or rather,*

*the child skill of cooperating with others, of helping, of receiving help, of accepting or asking for it, consequently respecting the other. This situation leads the children toward knowing themselves, since they can discover their limits. At the same time, it expresses bodily-kinaesthetic intelligence which is the skill of using the body to work with objects that require fine finger movements. Finally there is an atmosphere characterized by joy, cheerfulness, curiosity, hope for mutual success and empathy.*

We consider the above text to be of LQ because:

- the student produces generalizations such as - *there is always a leader in every situation* -;
- there is an incorrect use of text references – *This kind of playing expresses cooperative intelligence, or rather, the child skill of cooperating with others, of helping, of receiving help, of accepting or asking for it, consequently respecting the other.* In this case the quote is correct, with regards to the content. Nevertheless it is not coherent with the actions of the children in the video;
- the personal point of view is expressed as an absolute one - *there is an atmosphere characterized by joy, cheerfulness, curiosity, hope for mutual success and empathy.* Actually feeling an atmosphere is a very personal response, which means that different people might experience a different atmosphere in the same situation;
- there are references to unobservable data such as thoughts, feelings, intentions of the observed subject, like in the phrase - *joy, cheerfulness, curiosity, hope for mutual success and empathy*;
- there is no separation between description and interpretation - *This situation leads the children to know themselves, since they can discover their limits.*

#### **Example 2: HQ observation text**

*Regarding the cognitive, social and effective development of the children in the videotape I*

*could recognize the relationship between children and objects. Children are playing with a puzzle that they have to construct in order to compose a series. According to Piaget, the child forms concepts through action, even if the action is guided by the adult. One of the phases during which the relationship between children and objects develops consists of the identification of object functions and the attribution of meaning to them. Through the videotape I could understand:*

*THE OBSERVER: he/she doesn't participate in the activity, because he/she is engaged in video recording.*

*OBSERVATION SUBJECT: two children are present, engaged in a free time activity which in this case is completing a puzzle. The puzzle is composed of four kinds of figures: monkeys, bears, elephants and giraffes.*

*SCENE: the videotape is recorded in a section of an infant school, where I can see low yellow tables used by the children as a base for the puzzle. The floor is blue and behind the tables, on the wall, there are shelves with several toys and didactic objects.*

*OBSERVATION MODALITY: video camera*

*OBSERVATION DURATION: 1 minute and 14 seconds*

*START/END TIME: I don't know the start/end time*

*CONTEMPORANEOUS FACTORS: in the section I can see other children engaged in other activities. A child is disguised with a long skirt and a bag; other children are running in the room, and some are engaged at the yellow tables. I couldn't distinguish the dialogue among the children, because there are voices and noises.*

*BEHAVIOUR DESCRIPTION: at the beginning the video camera frames only a child (A) with a light jumper. He's engaged in completing a puzzle. After few seconds a child with a red jumper arrives (B), holding a piece of the puzzle in her hand. She puts it in the first line. A observes the object placement, saying something and he places other figures. A collects all of the elephant figures in the third line, while B is moving to the left keeping in her hand three pieces. B observes the composition, waits a little and then shows the puzzle in his hand to A. B points to a place on the table, saying: "You have to put this figure*

here". A tries to take the piece that B is keeping in his hand [...]

*HYPOTHESIS AND CONCLUSIONS: the atmosphere is positive, the children seem to appreciate the activities.*

The above text can be evaluated as a HQ one because:

- it is a long and structured text;
- there are details about duration and observational method adopted;
- the focus of attention is intentionally declared - *I could recognize the relationship between children and objects;*
- there is a clear separation between description and interpretation of data;
- there is a coherent and correct reference

to scientific theory – *Piaget;*

- there are particulars and conclusions supported by descriptive and concrete elements;
- there are references to observable data such as actions;
- the student uses overall personal linguistic forms;
- there are cognitive verbs - *I couldn't distinguish.*

### 3.4. The Outcomes

The Table 3 shows a general improvement in the observation competencies of the participants, both in online and in presence Workshop.

*Outcomes of online and in presence Workshop*

Table 3

<b>Online Workshop</b>		
First observation text: tot. 125		
LQ: 39 (31%)	MQ: 65 (52%)	HQ: 21(17%)
Second observation text: tot. 125		
LQ: 8 (7%)	MQ: 49 (38%)	HQ: 68 (55%)
<b>In presence Workshop</b>		
First observation text: tot. 117		
LQ: 81 (69%)	MQ: 36 (31%)	HQ: 0 (=%)
Second observation text: tot. 117		
LQ: 3 (3%)	MQ: 40 (34%)	HQ: 74 (63%)
<b>-78</b>	<b>+4</b>	<b>+74</b>

The quality of the majority of the observation texts produced as first activity of the online course are between LQ to MQ. At the starting point, the participants seem to have moreover a naïve approach to observation methodology. Only 21 texts on 125 are HQ ones. On the contrary in the fifth activity the HQ texts raise up to 68 (+47): there is an increase from 17% to 55%. At the same time the LQ texts decrease from 31% unto 7%.

With regards to the in presence students, nobody writes a HQ text in the first essay. The LQ texts are 81 while 36 are MQ. The second texts, written for the fifth activity, are visibly better: 74 texts are HQ, 40 MQ and 3 LQ, with an increase of

HQ texts from 0% to 63%, and a decrease of LQ texts from 69% to 3%.

These results give an evidence of the possibility to train competencies like those we are dealing with, online as well as in presence courses.

### 3.5. On Self Assessment

We intend to provide some further considerations on the self-assessment process. In the original form of the Workshop used during the academic years 2004/2007, the self assessment was only at the end of the course, when the students were asked to reflect about the training course in an unstructured way, without any points of reference.

During the last two versions of the Workshop we introduced a more detailed way to conduct self assessment. In the edition 2008/2009 our hypothesis was that, if the students could know our criteria (shown in Table 2) and could be involved in self-assessment without delay, then their metacognitive processes would be activated, facilitating them in the transition from naive to expert approaches. During

the current academic year we included two phases of self assessment using two different tools: the list built by the students and the list shared with trainers. Before dealing with the outcomes of our choice, we will illustrate the similarities between the list of criteria developed by the students and the list built by the trainers (Table 5).

*Criteria of trainers and trainees*

Table 5

<b>The evaluation criteria of trainees</b>	<b>The evaluation criteria of trainers</b>
	<b>TEXT STRUCTURE INDICATORS</b>
Detailed description of event	Long and structured (titles, paragraphs, bullet points, tables)
	<b>CONTEXT INDICATORS</b>
Observer and observation context	Presence of information about the observer and the context of observed situation
Time of observing	Presence of information about video tape duration and time of observing
Methodology	Presence of information about tools and observational method adopted
Clarify what and why do you observe	Presence of information about the focus of attention and the aim of the observation
Descriptive language. Express interpretation in adequate way	Separation between descriptive and interpretative data
Selection of useful data	Presence of hypothesis about the aim expressed; selection data focused on aim expressed
Reference to theoretical frame	Presence of textbook references and quotations
	References to concepts coming out from the book or the forum
	Use of technical language in adequate context
	<b>LINGUISTIC EXPRESSION INDICATORS</b>
Use of adequate language	Presence of analysis of events and concrete objects, with argumentations; conclusions supported by descriptive and concrete elements; references to details
	Use of his or her own point of view as a relative one
	References to observable data such as actions, verbal and non verbal languages of the observed subject and observer's internal world
	Use of personal linguistic forms
	Explicit use of cognitive verbs

### **3.6. The Outcomes of the Workshop for Observing Children at School 2008/2009**

We deal with the outcomes of the 2008/2009 version of the online Workshop. Our analysis is preliminary, in fact it is based only on a part of the texts

produced by the students, because the course ended in February 2009, and we are still collecting the data. Of the 220 participants, we have now analyzed the work of 135 subjects. As the characteristics of the sample are the same of the previous Workshop, it makes sense

to compare the data. Table 6 shows the improvement of observation skills among this group: it is evident that the percentage of students who wrote a HQ final

observation text is larger than in the previous versions of the Workshop. Only 4 subjects wrote LQ final texts.

*Outcomes of the Online Workshop 2008/2009*

Table 6

<b>Online Workshop 2008/2009</b>		
Initial observation text: tot. 135		
LQ: 62 (46%)	MQ: 57 (42%)	HQ: 16 (12%)
Final observation text: tot. 135		
LQ: 4 (3%)	MQ: 18 (13%)	HQ: 113 (84%)
<b>-58</b>	<b>-39</b>	<b>+97</b>

To provide and share the evaluation criteria in the first part of the course with the students seems to be helpful. In addition, from a qualitative point of view, some students clearly affirmed in their final dossier that they could understand their errors through the activities of self-assessment, as the below quotations show.

*Comparing the observation text done at the beginning of the course with the one done at the end, I noted very much differences. I understood these differences using both the indicators negotiated with my group and the indicators offered by the trainers (I noted several common points between the two lists). I believe that the second text is better than the first one because I can identify in it the typical figures of an expert approach.*

*Through the self-assessment and the comparison between the two texts, I discovered by myself the difference between a naïve observation and an expert one, and understand how my own thinking changed.*

*During the evaluation of the first movie, within our group different positions have emerged and this, of course, led to some conflicts. This is not bad! In fact, I personally think that conflicts will help people to source better ways of understanding. Interacting and openly*

*confronting gave the opportunity to develop professional skills in observation method.*

The relevance of eliciting metacognitive reflection in learning process is evident. We can conclude that in this way the students become protagonists of knowledge building in every aspect.

#### **4. Conclusions**

The analysis of the study case seems to reach two important results: on one hand the considered Workshop conducts to quite the same outcomes both in the in presence and in the online version. This result puts in evidence that a direct intervention of teacher seems to be not so relevant in the training process. This kind of result is confirmed by the final judgements that online and in presence participants obtained for the acknowledgment of the Workshop. In the online course 47 students had a *very good* evaluation, 57 a *good* evaluation, 12 an *average* evaluation, 9 a *sufficient* evaluation. In the in presence Workshop 69 students had a *very good* evaluation, 31 a *good* evaluation, 13 an *average* evaluation, 4 a *sufficient* evaluation.

On the other hand it is possible to affirm that a positive correlation exists between high performance in observation method and self-assessment activities. Our research seems also to demonstrate the

importance of sharing with students the criteria that establish the difference between a naive and an expert way to develop an observation text. Usually the different levels of knowledge and competencies between trainees and trainers represent a problem. In order to reduce this gap, the student can be asked to devise criteria for evaluation. The trainers' criteria can be made available to the students, thereby promoting a comparison and a reorganization. The next step in this direction could be to encourage a peer-to-peer review. After the final individual self-assessment, it could be useful to ask the students to participate to another web-forum. The aim can be to give a reciprocal assessment of their own works, analysing the quality level of the final observational texts within the small group. The activity of reciprocal assessment might help students to understand not only the changes in their own activities, but also the possible mistakes and improvements of the other participants. Through this modification the students would receive at least three different kind of evaluation: self-assessment, peer to peer review and curricular evaluation of trainers.

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