TRAINING TEACHERS TO OBSERVATION: AN APPROACH THROUGH MULTIPLE INTELLIGENCES THEORY

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Abstract: *Observation is a daily practice in scholastic and educational contexts, but it needs to develop into a professional competence in order to be helpful. In fact, to design an educative and didactic plan and to provide useful tools, activities and tasks to their students, teachers and educators need to collect information about learners. For these reasons we'll built a Web-Observation (Web-Ob) application, a tool able to support good practices in observation. In particular, the Web-Ob can provide Multiple Intelligences Theory as a framework through which children's behaviors and attitudes can be observed, assessed and evaluated.*

Key words: *observation process; observation competencies; multiple intelligences theory; community of practice.*

1. Introduction

Our scholarly interest and practical interest in the application of Multiple Intelligences Theory (MI), has led us to develop an online environment for educators, teachers and experts who are, or wish to, working with this theory. MI used in classrooms greatly relies on qualitative observation and monitoring of children. Yet, such observation generates a large quantity of qualitative data, which is difficult to manage. In this article, we'll describe on experience in an Italian nursery school, which has been applying MI for the last 8 years. After an initial period, during which educators' observational work relied on paper and pencil data, a web application was developed to facilitate their task. The web application enabled educators to monitor children's behaviors and development in real time, and to take brief written observation texts on a laptop. In addition Web-Ob allows the users to describe *what* a particular child is doing, *when*, *with* whom, *during* what kind of activity and so on. The on-line environment can also be used by different groups in different schools in different countries, in order to form a community of practice in specific fields.

2. The Multiple Intelligences Theory as Background

Multiple Intelligences Theory was proposed by Howard Gardner, a developmental psychologist at Harvard University. Using a wide variety of evidences, initially detailed in "Frames of Mind: The Theory of Multiple

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Intelligences" (1983), Gardner argues for seven relatively autonomous intelligences, briefly described in the below list.

- *Linguistic intelligence* (LI) features sensitivity to language in spoken and/or written forms, the ability to learn languages, and to use language in pursuit of one's goals.
- *Logical-mathematical intelligence* (LMI) concerns the capacities for mathematical operations, logical analyses, and scientific investigation.
- *Musical intelligence* (MI) facilitates composition, performance, and appreciation of musical patterns.
- *Bodily-kinesthetic intelligence* (BKI) involves the use of all or parts of the body to solve problems such as in an athletic performance or the creation of fashion products.
- *Spatial intelligence* (SI) entails the perception, use, and transformation of spatial information.
- *Interpersonal intelligence* (PI) enables individuals to recognize and make distinctions among others' feelings and intentions.
- *Intrapersonal intelligence* (PI) allows to understand themselves and to use this understanding effectively to manage their own lives.

In a second time, Gardner added to the first list two additional kind of intelligence:

- *Naturalist intelligence* (NI) allows people to distinguish among, classify, and use features of the environment.

Gardner has also tentatively proposed the following kind of intelligence, but it is not yet in place:

- *Existential intelligence* (EI) consists in the capacity to use philosophical reasoning, to manage justice, to deal with religious issues. This last intelligence is not really completely approved by Gardner, as it does not match all of his eight criteria to establish that a group of abilities can be considered an *intelligence*.

Currently the full list consists of 8 intelligences and a half.

3. Four Reasons to Adopt Multiple Intelligence Theory in Education and Teaching

We are convinced that to adopt Multiple Intelligences Theory in education and teaching can be useful both for teachers and students. First of all, MI Theory provides a *framework for understanding children's pluralistic behaviors and products.* In fact, MI Theory equips teachers with a theoretical mental structure helpful for identifying beyond children's actions, expressions, items and creations a cluster of specific abilities. As the way in which, within different cultures, we assign meaning to one practice or another, to adopt MI Theory can improve the chances that teachers will regard the whole range of children's cognition as significant. Even if to know the theory, and to observe children through its assumptions is a very basilar way to deal with, it is clear the kind of consequences it may have when in a classroom there are disables, children with special needs, foreigners, and children who don't mainly use language and logic in their daily problem solving and learning process.

A second reason targets the development of the range of children's multiple intelligences. This requires greater action, because the educative context has to be equipped with a variety of physical, cultural, and social affordances (Gibson, 1977) to engage the range of children's strengths. In the Project Spectrum, Gardner and a group of his collaborators suggest to organize the class with the so called learning centers. The learning centers can be organized as controlled contexts, mainly built in order to facilitate the expression of one of the intelligences. In the *reading/narrative* center children are mostly asked to use words (linguistic intelligence); in the *math* center children can deal with numbers or logic (logical-mathematical intelligence); the *building and arts* center addresses to the abilities to manage forms, balance and colors (spatial intelligence); in the *music*

center instruments and any kind of tools useful to produce noises, rhythms and melodies are available (musical intelligence); the *social* center arrangement engages children in self-reflection (intrapersonal intelligence) and group activities (interpersonal intelligence); physical experiences are provided in the *bodily-kinesthetic* center (bodily-kinesthetic intelligence); experiences in and/or with the natural world/objects are presented in the *naturalist* center (naturalist intelligence); objects addressed to involve children's reasoning on rules and values are at disposal in the *philosophical* center (existential intelligence).

A third and more complex reason to apply MI theory consists of documenting children's specific behaviors, in order to build a holistic vision of children's competences. It can be done systematically observing children within the centers. For this use of the theory, educators and teachers need deeper knowledge of the theory and greater competence in relating children's observable actions to their probable underlying abilities.

A fourth reason to apply MI theory is to draw on children's profiles to promote greater balance in their development (at least in the Italian educative culture), that is to say to adopt *bridging* strategies. Through the use of learning centers any teacher or educator can identify the areas in which the students have strengths. In fact students' strengths and preferences are reflected through the activities they selected, the length of time they devoted to the activities, their body language during the activities, what they said about the activities both during and after doing them, and also through the outcomes and products they arrange. Starting from the strength areas, it is possible to propose activities in which students can exercise their abilities applying them to an array of choices and opportunities linked to the weak area. This would allow students to explore receiving and communicating information in ways that suited them best.

4. The Role of Observation Process

It is quite clear that, at each of these four levels, a consistent work in observation is implied. As intelligences by themselves cannot be observed, but only be inferred by analyzing individual actions, expressions and products, it appears clear the reasons why to develop a training model towards the acquisition of competences for teachers and educators in observing child through MI theory.

In fact, educators and teachers are supposed to assume a correct approach when *observing* children. If *anyone* can observe children using *informal* competences, teachers and educators will need to do it in a professional way. This is the reason why it is crucial for them to learn the use of a proper methodology.
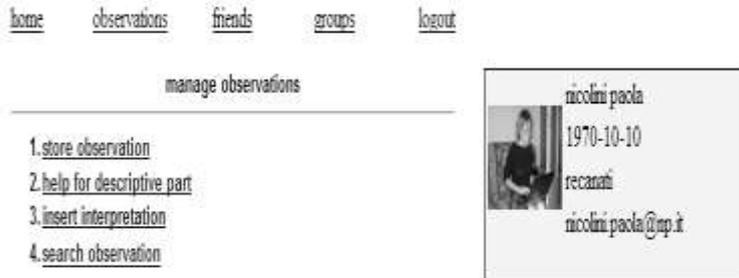
5. The Web Observation Application

The Web Observation application (Web-Ob) is intended for educators and teachers to become skilled to use a proper observational methodology. It offers scaffolding for their daily observational activity, and facilitates the attainment of good observation practices through its structure, as we will show. Web-Ob contains specific references to MI, such as a list of the intelligences, and the key abilities related to each one of them.

5.1. The Program Design

Web-Ob provides a useful path for observation activity and windows by which to collect data such as name of the school/observer/child, age of children, major goals of the observation (for example, to figure out a profile of a child or to collect data to solve learning or emotional problems), the main focus (for example, the relationship between child and known adults or, between child and peers), the general context (place, situation in which the observation is conducted, kind of activity, the present persons, the persons actually involved, etc.). The

structure of the application includes a box in which to describe the behaviors of the observed child in terms of actions, non verbal communication, and verbal expressions. Another box encourages the user to provide her/his interpretation of the

observed situation. A final part is available to put in evidence other comments or notes, suggestions for further observations, advice for educative or didactic interventions, and so on (Fig. 1).

5.2. A Library of Observational Texts Based on Multiple Intelligences Theory

In this part of the program's environment, users can refer to some model observation texts that are included to scaffold users' skill development. The examples provide users with reference points of what kind of children actions and behaviors could be observed with reference to one or more intelligences.

In the following table some examples are shown, related to the observation of spatial intelligence, and includes notes about aptitude to follow a trajectory through eyes, perception of colors, orientation in a familiar context, capacity to recognize forms, ability to use eye-hand coordination in order to fulfill a draw, etc. (Tab. 1).

5.3. A Training Course Aimed to the Acquisition of Expert Skills in Observation Method

The program also puts at users' disposal a tutorial package, designed to acquire competences in the observation method and to facilitate the transition from a naive approach to an expert one in the observation activity. The tutorial contains:
- a short course articulated in 8 activities;
- a synthetic theoretical paper;
- a list of figures useful to identify strengths and weaknesses in the observation text written as essays requested by the course, to be able to conduct a self assessment. [1].

Observation text models   Table 1

Child's name and surname: C.S.	Spatial intelligence
6 months h 10:30 Location: section	Spatial activity: the educator spreads a number of coloured balls on the floor, letting the children follow them with their eyes. C. watches the balls showed by the educator. He shifts his gaze up and down. He follows the trajectories of some balls on the floor. **C. seems able to orient his gaze in order to follow the movements of objects.**
13 months h 10:20 Location: hall	The teacher asks the children to move to the section of the infants for the activity. C. smiles and heads straight for room. **C. shows to know the location of the named room. He confidently moves into the school.**

27 months h 10:00 Location: class	A sheet with a grid is delivered to each child, then two-tone cardstock squares are made available. C. notices the paper and then spontaneously attacks each square within its own space in the grid. **C. seems to take into account the grid and the coloured boundaries.**
32 months h 10:50 Location: section	The children are engaged in an activity with geometric shapes-square, triangle, trapezoid and circle. C. recognizes the forms and pastes them in the corresponding places. **C. shows to recognize shapes and is precise in outline.**

5.4. Automatically Elaborate Information

The environment allows information to be sorted and retrieved from an available database. The program automatically enables some quantitative data to be generated, such as:
- how many observations a specific user carried out and accomplished;
- how many children were observed;
- how many times a child was observed;
- how many times a child was observed with respect to a specific goal, or context;
- the chronology of observations on a child (for example to check her/his development and evolution in specific fields);
- info on the contexts frequently chosen by the users to observe;
- ... and so on.

Through some simple actions within the program, Web-Ob provides specific monitoring and continuous feedback. Nothing similar can be done only *by hands*.

In fact, the program makes it possible to consider the attitude of the educator towards the children/the contexts/the abilities/etc. Through the monitoring of how many observations one user did, how many children she/he observed or not, how many contexts she or he selected or not, the user herself/himself is enabled to self manage the professional behaviour and adopt educative actions.

Table 2 shows a synthetic, quantitative view of the observational work in a month. [2] The most observed child and the most observed intelligences are clearly outlined. Educators and teachers can reflect on this

kind of data in order to understand if they use to pay attention only to some children, behaviours and/or if it is an effect of the real life in the section/class. In any case, reading the table, educators can acquire awareness on the way they observed children and their intelligence. They can then decide in which way to revise their work, modulating both the observational and the educational activity.

As it can be seen in the table 2, C.G. is the most observed child (18 observations are centred on C.G.). At the same time, the logical-mathematic intelligence is largely considered (34 observations are related to ILM). The synthesis the program can deliver is important for educators and teachers in order to understand who are the less considered children (if so) and the less observed intelligences. In this way Web-Ob provides users a tool for self monitoring and self assessment.

The program also allows users to retrieve information and to print it, according to one or more criteria: for example, an educator can have all the chronologically organized observations documenting one child's relationships with other children.

When a great amount of observations are put together in a chronological order, it may appreciate more subtle differences from one month to another. If a child's development is not progressing, the observation data may help educators and parents to provide useful activities and contexts in order to move the child's progression. Such data may help educators to reflect on, and perhaps modify, educative actions in this field. The following table shows a child developmental trend in the field of interpersonal interactions. The example

helps to show the way in which educators (and parents) can see M.A's increasing ability to manage relationships with others.

It is a way to longitudinally visualize the development of a child (Tab. 3).

Quantitative overview of observational activity in a month   Table 2

March 2009									
Child's Name &Surname	**LMI**	**BKI**	**PI**	**SI**	**LI**	**NI**	**MI**	**EI**	**TOT**
W. D.	1	1	2	1	0	0	1	0	**6**
M. L.	1	1	1	1	1	0	1	1	**7**
G. S.	1	2	0	2	1	1	1	0	**8**
M. A.	2	2	0	1	1	1	0	1	**8**
B. A. L.	2	2	1	1	0	2	1	0	**9**
W. L.	1	1	2	1	2	1	1	0	**9**
P. T.	2	2	2	1	1	1	1	0	**10**
V. A.	1	1	2	2	1	1	2	0	**10**
D. L.	2	2	1	3	1	2	0	0	**11**
G. G.	3	1	1	1	2	2	0	1	**11**
D. G.	2	2	2	2	1	1	3	0	**13**
R. G.	2	3	1	2	1	2	1	1	**13**
S. C.	2	2	2	1	1	2	3	0	**13**
T. M.	3	2	2	1	3	1	0	1	**13**
S. M.	3	2	2	1	2	2	2	0	**14**
C. G.	4	3	2	3	3	1	1	1	**18**
Tot.	**34**	**32**	**24**	**24**	**23**	**21**	**18**	**6**	

Another possibility is to have a synchronic view of a child during a specific moment in his/her life. The Table 4 shows an example.

5.5. The Community Area

As we use a socio-constructivist approach, we consider knowledge as the result of *construction of meaning* and *negotiation* that happens within social exchanges (Bruner, 1990). From this theoretical framework two consequences originate: the firts one is that to observe is not just a simple action of recognition/ identification, but is an active building of data and situated understanding, within authentic relationships and tasks (Scardamalia & Bereiter, 1996; 2002); the second consequence is that knowledge is a building process within social relations and communication (Bruner, 1990).

Qualitative overview of a child development within personal intelligences   Table 3

M.A.	Personal Intelligences
6 months h 09:20 Location: meeting room	A. is sitting in a little lawn chair. An educator is next to him and A. is attentively observing her. As soon as the educator of the section enters in the room A. immediately lights up, smiling and waving his arms and legs. **A. seems to recognize the teacher and to show pleasure in seeing her.**
13 months h 12:30 Location: meeting room	It is nap time. A. is lying on a cot, and is waiting to be rocked. A baby is next to him. He observes her for few minutes then starts to cuddle her. When the child is about to fall asleep, A. gives her a kiss on her forehead. **A. shows friendliness towards the babies.**

25 months h 10:10 Location: Section	The educator calls a child to do an activity. After his turn A. remains near to the table and, as a child approaches it to do the work, he picks up the apron and handed it to her/him. When he hears a child asking to go to the bathroom, A. comes to the door and held it open. **A. often shows spontaneous consideration to the needs of others**
32 months h 17:10 Location: meeting room	We are in the meeting room, A. is close to a baby who is crying. A. gives him a small bell, saying, "Don't worry! I'm here! Your mother is going to arrive in few minutes!" **A. shows empathy and seems to be able to take care of a friend**

Following this orientation, Web-Ob offers the possibility to make use of collaborative devices such as blogs, web forums, wikis and links to other Web 2.0 applications.

Qualitative synthesized synchronic overview of a child development   Table 4

M.T.	Musical intelligence	Naturalistic intelligence	Bodily kinesthetic intelligence
6 months	H 10:30 Location: section The teacher presents a noisy toy to T. He squeezes it in his hands, smiles and begins to shake it. T. repeats the action several times, smiling at every time the toy produces a noise. **T. seems to like sounds and enjoy noises**	h 10:30 Location: section The educator offers the children a naturalistic activity, providing them with a bunch of different herbs such as rosemary, mint, lemon balm, chives, in order to observe, to touch and to smell them. T. grabs two sprigs of rosemary, one in each hand. He passes them on his face, keeps them, touching the leaves with the tips of his fingers. **T. shows interest exploring scented plants**	h 09:50 Location: section The teacher is doing bubbles. T. follows the trajectories from the top to the bottom. When the bubbles are at hand, T. tries to grab them with hands. He breaks a few and smile. **T. demonstrates an eye-hand coordination**

This *community area* is intended as a space within which to participate and share refined observation texts or even conclusions, in order to confront and negotiate meanings, doubts, hypothesis, in a continuous formal and informal mediation among the community of users (Wilson, 1996). A useful device at users' disposal as a reciprocal help in order to carry on, share and negotiate observation practices through Multiple Intelligence theory or other even other theoretical frameworks.

6. Conclusions

We are now testing the program with a group of teachers in training, in order to verify the effectiveness and usefulness. We are developing a system of self-correction, allowing the users to edit, correct and improve their own observational texts.

We also see many interesting possibilities in Web-Ob utilization by professional communities such as:

- to build a great storage of observation texts organized on the base of the 8 different intelligences used as entry points;
- to share problems in the interpretation of children behaviors as an expression of one or more intelligences;
- to organize the observation texts on the base of children's ages in order to make it possible to find recurrences or differences;
- to compare in a cross-cultural overview the best practices and problematic situations.

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Notes

1. We described the design of the course, and some results in a previous edition of Bulletin of the *Transilvania* University of Braşov • Vol. 2 (51) – 2009.
2. All the examples referred in the tables show the work carried on in the Nurseries and Infant Schools of *Lagiocomotiva* (Milano-Italy). Lagiocomotiva was adopted MI Theory as a constant framework to work with children, since the last ten years.