

## The POSI As an Analytical Observation Tool for Monitoring the Development of Children From 0 To 6 Years of Age

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### Abstract

An in-depth knowledge of children is achieved through an analytical observation, which makes it possible to obtain useful and fundamental information for the construction and implementation of a functional and inclusive planning, addressed to the group or section, which takes into account, at the same time, the specificities of the individual.

For this reason, POSI (Italian acronym for *Progettazione e Osservazione dei Servizi per l'Infanzia*, Design and Observation in Services for Children's Services) is a tool aimed at educators and teachers of preschool services, dedicated to children aged 0-6 years, which aims to support the observation and understanding of typical and atypical development and the processes of learning and participation, with the ultimate aim of designing educational and didactic activities in a targeted and appropriate way.

The experimentation was carried out in Italy and involved 15 facilities dedicated to the 0-6-year age group, for an entire educational and school year. After a training phase on the use of the tool POSI, educators and teachers carried out an initial observation (T0) of the children's development and the context, which was used as a basis for planning appropriate educational interventions. Subsequently, a second observation (T1) was made in order to assess the evolution of the development and, if necessary, to recalibrate the intervention. Finally, a third observation (T2) made it possible to establish the effectiveness of the intervention, by assessing whether the difficulties initially identified persist or not.

The results showed that this tool made it possible to detect early and latent signs of atypical development in 15% of the children, while a further 30% benefited from an appropriate redesign, which enabled a strengthening of skills and abilities that had been found to be inadequately developed in the first observation phase.

**Keywords:** Childhood, Educational design, Special educational needs, Inclusion, Educational follow-up.

### Introduction

The bio-psycho-social perspective, articulated by Engel in 1977 [1], recognises the intricate interplay between brain, mind and social context, emphasising the importance of considering all these aspects in education. This perspective is further supported by Bronfenbrenner's (1979) ecological theory [2], a model that emphasises the importance of environment and social contexts in shaping individual development and has had a substantial impact in the fields of developmental and educational psychology, helping to understand how the social and cultural environment shapes an individual's growth and developmental trajectory [3-6]. The educational and didactic context thus assumes fundamental importance in promoting development; in particular, fundamental is the education offered during the first thousand days of life, during which the experiences, stimuli, interactions and care experienced are imprinted on the genetic and cerebral level, also determining later development [7].

In order for the educational offer proposed in childcare services to be of quality, it is important for educators and teachers to be able to analytically observe children's development, in order to be able to plan adequately and coherently to the needs of the

class and the individual, valuing their individuality [8]. Observation is a method of detection aimed at understanding a certain manifestation, the result of which leads to a precise and complete description of the peculiarities of a behaviour and the conditions under which it occurs. Observation is, therefore, an intentional, focused, active and specific gaze [9]. The observation process is an indispensable element in education and school reality, as it enables the educator and teacher to gather information on individual children in order to draw up a personal and class profile as close as possible to reality [10]. However, one of the critical points of observation is that it tends to focus on what the educator considers most relevant and significant in relation to his or her motivations and reasons for the investigation; so that observation represents a source of information only if it is structured and exercised in a conscious manner using procedures [11]. Thus, the need emerges for an instrument that acts as a "guide for the eye" [12] and allows for scientific and at the same time detailed observation.

Observation, design and evaluation are essential and complementary aspects of any educational and rehabilitation project. As Galanti [13] points out, for many years these aspects

were the inheritance of professional action specific to the medical and biological sciences; much more recently (since the end of the last century), attention to observation and evaluation processes has also been developed and institutionalised in the field of education [8].

Observation, together with assessment, planning and teaching, are part of the same complex action and, as such, must be carried out by all educators and teachers. An excellent observation of the child is useless if it is not functional to the understanding and evaluation of his or her overall functioning, with reference to the context in which the observation takes place, and if it does not aim at an excellent planning (or, better, as Donald Winnicott would say, "good enough") of coherent actions, which in turn will trigger behaviour that will be re-observed and re-planned [14]. This means that space and time must be concretely dedicated to training, comparison and exchange between educators, teachers and trainer-researchers, in order to ensure the conscious and intentional support of a common conceptual and methodological background and to intentionally and effectively promote an integrated process of observation, evaluation and design [8]. In particular, as L. Cottini and A. Morgani [15] point out, a fundamental conceptual aspect when using instruments at the section-school level for all children concerns keeping in mind the extreme individual variability that inevitably determines the impossibility of observing and detecting everything, for all.

The POSI, in Italian acronym for *Progettazione e Osservazione nei Servizi per l'Infanzia* - Design and Observation in Services for Children's Services, designed by S. Morsanuto and P. Damiani [16], is proposed as a tool that aims to enhance the importance of observation, evaluation and design in pre-school educational services, building a wealth of data on individual children, which will allow for targeted educational interventions. Through POSI it is intended to:

1. to promote culture and awareness in order to understand the interconnection of biological, cognitive, socio-emotional

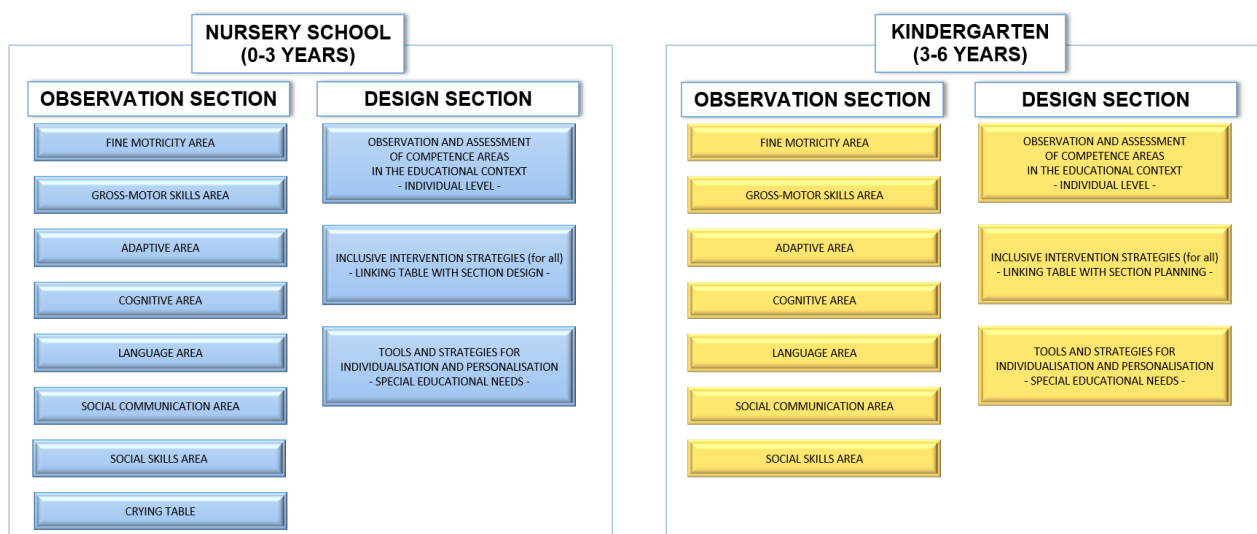
processes and the role of educators and context in development and learning processes;

2. to improve analytical observation, for the correct development of skills in children, identifying critical points;
3. to develop a methodology that leads to effective and functional planning based on systemic and ecological observation;
4. to support and strengthen the relationship between special educational needs and the ICF - *International Classification of Functioning, Disability and Health*;
5. to facilitate the early diagnosis of developmental abnormalities.

In the light of the above, this research aimed to assess how the tool can help educators and teachers in conducting precise and systematic observations, with the aim of monitoring the development of individual children and registering and identifying any signs of difficulties or special educational needs at an early stage, so as to respond appropriately, providing early and targeted intervention. The approach is concerned with ensuring that every child, regardless of his or her social situation or family history, has the opportunity to receive excellent educational support during the first six years of life, a timeframe in which the essential foundations for a child's future learning and development are created, which is why it is imperative to remove any barriers that may hinder equal opportunities. Therefore, the use of an integrated tool of observation-evaluation-educational and didactic planning appears indispensable to try to enhance what is reported in the literature and, consequently, to favour the improvement of pedagogical practices and inclusion processes for all children.

### Material and methods

The POSI tool consists of two modules (Figure 1), which can be used with 0-3- and 3-6-year-olds respectively, each divided into two sections: the first allows for analytical observation of child development and context, while the second models the planning and design of educational and pedagogical activities.



**Figure 1:** Instrument interface showing its division into modules

The choice of the various areas to be observed was guided by the assumption of the biopsychosocial model of the *International Classification of Functioning, Disability and Health - ICF* [17], and in particular of the ICF-CY, *International Classification of Functioning, Disability and Health for Children and Youth* [18] as a frame of reference that allows for a complex, ecological and global reading of the various functioning of children in relation to their life contexts.

The areas highlighted in the observation section are eight, relating to: fine motor skills area; gross-motor skills area;

adaptive area; cognitive area; language area; social communication area; social area and a specific table analysing infant crying, present exclusively in the module dedicated to the 0-3 years age group.

Within each area there are skills, the attainment of which can be verified through the various items that guide the educator/teacher in the observation. In addition, each item is followed by a practical example, relating to an observable action or behaviour of the child, as visible in Figure 2.

FINE MOTRICITY AREA					
A. Reach, grasp and release					
AREA	ID	ITEM	EXAMPLE		
MF	A.1.0	Perform direct tapping and/or sliding movements with each hand	Tap and move objects with the left and right hand. The object can be lost. The hand should not be held in a fist.		
MF	A.1.1	Makes undirected movements with each arm	Make undirected movements with the right and left arm when there is an object present.		

**Figure 2:** Example taken from the area of fine motor skills: skills concerning reaching, grasping and releasing an object, with a couple of exemplified items and related examples.

The assessment was designed on the ICF model - *International Classification of Functioning, Disability and Health* [17]. The value assigned to each item ranges from "0", i.e. no problem, to

"4", i.e. complete problem, taking into account performance excellence, which corresponds to "10" (Figure 3).

Detection	SCALE OF QUALIFYING VALUES					
	0	1	2	3	4	10
	NO Problem	MILD Problem	MEDIUM Problem	SERIOUS Problem	TOTAL Problem	STRENGTHS
1 <sup>a</sup>						
2 <sup>a</sup>						

**Figure 3:** Rating scale

It is also possible to decline each assessment by means of the "Insight Notes" (Figure 4), which describe the setting:

- A. the degree of assistance provided by the educator in enacting the behaviour investigated;
- B. whether the behaviour was in any way interfered with by distractions or events that altered the child's attention;

- C. whether a direct test was carried out, i.e. a specific setting was set up to observe the learner;
- D. whether it was necessary to modify or adapt the item, depending on the learner's difficulties or skills;
- E. the quality of the observed performance with respect to the child's competences (over or under);
- F. the teacher/learner ratio (1:1 or 1:5 etc.).

NOTES					
A	B	C	D	E	F
Assistance provided	Interfered behaviour	Direct test	Modification/ adaptation of the item	Quality of performance versus competence	Teacher: learner numerical ratio

**Figure 4:** In-depth notes.

At the end of each area, the evaluations can be summed up in order to have an overall picture of the child's development, taking into account strengths and weaknesses, useful for educational and didactic planning.

For the observation result to be as reliable as possible, the criteria of repeatability and reproducibility of the administrations must be met. The first is the agreement between the results of measurements carried out under homogenous conditions (same instrument, educator/teacher, experimental situation and subject) within a short period of time. The second is the agreement between the results of measurements made under different conditions.

The section of the tool dedicated to educational and didactic planning is subdivided into three macro-areas, which present different moments and purposes:

1. Observation and evaluation of the areas of competence in the educational and didactic context;
2. Inclusive intervention strategies - table linking with section design;
3. Tools and strategies for individualisation and personalisation - special educational needs.

These three macro-areas, moreover, are articulated according to an inclusive logic that casts its gaze, in an alternating and

correlated manner, both on the group/section of children as a whole and on the individual, in order to grasp the complex dynamics of each child's functioning in relation to the context and to enhance the developmental and educational resources inherent to the group context.

In particular, the first macro-area takes into consideration the individual level and is articulated according to the "fields of experience" (such as: the self and the other; the body and movement; speech and words; knowledge of the world; images, sounds and colours), facilitating the monitoring of the implementation of activities aimed at the development of the competences envisaged by the Italian Ministerial Directions, and the intentional and targeted observation of each child during their performance. The form (visible in Figure 5) is accompanied by columns dedicated to the description of the learning context, in terms of Educational and didactic activities, during which the observation takes place, and Environment, in which it is possible to describe the spaces, times, materials, conduct modes and the climate present. Finally, also in this section, there is a scale of qualifiers (consistent with the ICF scale) that makes it possible to describe the child's functioning in relation to the specific activity and the specific context, in a codified and comparable manner, with other children and longitudinally, with future observations of the same child on the same activities.

**INDIVIDUAL LEVEL**

FIELDS OF EXPERIENCE		DETECTION	EDUCATIONAL AND DIDACTIC ACTIVITIES	ENVIRONMENT
SELF AND OTHERS	Emotional-relational area	Eye contact with the interlocutor; relationship with adults and/or peers; interest in activities; building self-esteem; adaptation and flexibility	1 <sup>a</sup>	
			2 <sup>a</sup>	
	Awareness/metacognition area	Recognises the limits of one's own actions in the context in which one operates; adapts to new situations; acquires awareness of one's own actions; develops awareness of and respect for rules.	1 <sup>a</sup>	
			2 <sup>a</sup>	

**Figure 5:** First macro-area - Observation and evaluation of competence areas in the educational and teaching context.

The second macro-area (extract visible in Figure 6), called "Inclusive intervention strategies. Table of connection with section planning", is made up of a sheet divided into areas of activity (playful activities, listening and memorisation, motor, mimic-gestural, graphic-manipulative, dramatisation, symbolic-imitative, metalinguistic, verbalisation of experiences and

personal experiences, of logical-temporal ordering, perceptive and collaborative) that must be designed and implemented for the whole group of children, but which must be chosen on the basis of knowledge about each individual child, obtained through the observation of each one's functioning carried out with the first macro-area 1.

INCLUSIVE INTERVENTION STRATEGIES (for all)			
ACTIVITY	DESCRIPTION ICF	DETENTION	Notes
			(any explanatory descriptions or considerations)
Playful activities	Sense-motor play	1 <sup>a</sup>	
		2 <sup>a</sup>	
	Role play - Symbolic play	1 <sup>a</sup>	
		2 <sup>a</sup>	
	Unstructured play	1 <sup>a</sup>	
		2 <sup>a</sup>	

**Figure 6:** Second macro-area - Inclusive intervention strategies. Connection table with section planning.

The last macro-area, called "*Tools and strategies for individualisation and personalisation*" (extract visible in Figure 7) is dedicated to children with emerging difficulties, detected

by observations made with the tool, who have no diagnosis, to children with diagnoses not recognised as disabilities (such as, for example, Primary Speech Disorder).

DESIGN FORM FOR PERSONALISED EDUCATIONAL AND EDUCATIONAL INTERVENTIONS							
ID	TITLE	INTRODUCTION OF FACILITATORS	BARRIER REMOVAL	TEACHING STRATEGIES INCLUSIVE	TIMES	DETENTION	Notes
							(any explanatory descriptions or considerations)
H.1.0	LEARNING AND APPLICATION OF KNOWLEDGE					1 <sup>a</sup>	
						2 <sup>a</sup>	
H.1.1	TASK AND GENERAL REQUIREMENTS					1 <sup>a</sup>	
						2 <sup>a</sup>	
H.1.2	COMMUNICATION					1 <sup>a</sup>	
						2 <sup>a</sup>	

**Figure 7:** Third macro-area - Tools and strategies for individualisation and personalisation

The POSI tool currently exists in paper format; however, the authors intend to digitise it and realise a Web application, so as to make it easier to use, making it usable from different types of devices with an Internet connection, such as computers, notebooks, tablets and smartphones.

The testing of this tool took place in 15 pre-school facilities, namely nursery schools, dedicated to the 0-3 age group, and kindergartens, for children aged between 3 and 6. These facilities were located in the Italian regions of Piedmont and Lombardy, in both metropolitan and peripheral areas. Both large state-run institutions and small and medium-sized private facilities were involved, in order to test the instrument in different economic, social and cultural contexts. The trial involved 17 educators and teachers, who applied the tool on a total sample of 120 children, for the entire duration of the educational/didactic year, i.e. from September 2022 to June 2023.

An initial training phase for educators and teachers enabled them to understand the POSI tool and assimilate its underlying logic, so that they could use it independently. The teachers then carried out an initial observation (T0) of the different developmental areas of the individual children using the first section of the tool. At the end of the observation, the data collected were read out and used to plan educational and didactic interventions aimed at the individual child and the class, which were inclusive and functional for the recovery of any difficulties identified in individuals. Throughout all these activities, continuous monitoring by the authors made it possible to remove doubts regarding the use of the tool and support professionals in their difficulties.

Once these interventions had been implemented, a second observation (T1) was carried out, with the aim of monitoring the children's development, measuring deviations, i.e. assessing whether any previously observed difficulties persisted or had been recovered, and, if necessary, recalibrating the interventions with a view to improvement.

Finally, the third observation (T2) carried out at the end of the interventions made it possible, on the basis of a comparison with

the previous ones, to assess the effectiveness of the annual planning on the overall development of the individual children.

### Results

Following the first observation (T0), the presence of difficulties, fragility and problem behaviour was reported in 25% of the children, as a result of which targeted and appropriate interventions aimed at the individual and the class were designed and implemented.

The results of the third observation (T2), which took place at the end of the experimentation and at the end of the educational/scholastic year, showed that 18% of the children, thanks to the interventions designed and carried out in the fields of experience, enhanced skills and abilities that initially proved to be inadequately developed. In the remaining 7% of the children, the manifestation of difficulties persisted, which is why they were referred to a child neuropsychiatrist for a psychodiagnostics evaluation. In this case, the POSI constituted a link between the educational service and the health service, which does not have the possibility of observing the child in time and school space. Instead, this tool enabled the school to provide analytical information on the evolution of the various areas of development and the child's behaviour during the educational/school year and to be an active player in the early detection of a possible diagnosis.

### Conclusion

Early childhood educators and pre-school teachers play a crucial role in the development and learning of children, which are strongly influenced by the context and the pedagogical action implemented towards them. Therefore, POSI has proven to be a tool capable of directing the views, thoughts, actions and reflections of teachers and educators on the basis of scientifically valid and inclusion-oriented paradigms and models.

The perspective of this work is to disseminate this tool at an international level in educational services for the 0-6 age group, through the creation of a digital platform that can be used by teachers and educators and that can be updated according to the needs gathered, with a view to lifelong learning.

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