The use of ICF-CY in Italian school and Evidence Based Education approach: data and research perspectives

L'impiego dell'ICF-CY nella scuola italiana e l'approccio dell'Evidence Based Education: dati e prospettive di ricerca

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abstract

The purpose of this article is to describe jointly and cross-data the opportunities offered by the use, in the perspective of Evidence Based Education (EBE), of the International Classification of Functioning, Disability and Health for Children and Youth (ICF-CY) in research and instructional design as it emerged from the results of three surveys conducted by the University of Roma Tre. According to the ICF-CY conceptual framework and the EBE perspective, three studies have been designed to obtain a composite overview from which we can highlight: the current level of knowledge and use of this classification by the teachers of the Italian school; the possibility to implement such use by means of appropriate teachers' training activities; the possibility to collect, pre and post specific support activities, integrated data about activity and participation of all students. Data analysis is presented in order to give a contribute to the dissemination of information collected by a rigorous research design in the field of special education.

Key-words: ICF-CY, Evidence Based Education, Special Educational Need, school inclusion

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1. Introduction

The purpose of this article is to describe jointly and cross-data the opportunities offered by the use, in the perspective of Evidence Based Education (EBE), of the International Classification of Functioning, Disability and Health for Children and Youth (WHO, 2001, 2007)[1] in research and instructional design as it emerged from the results of three surveys conducted by the University of of Roma Tre[2] (Italy). These researches highlight the possibility of using tools available both in educational and statistical field as the International Classification of Functioning, Disability and Health for Children and Youth (ICF-CY) to implement a process of collection, analysis and knowledge of all the elements that make up the educational processes within an inclusive perspective. The aim is to activate a virtuous circle of continuous and gradual improvement of the educational system, particularly for students with disabilities, Learning Disabilities (LD) or other Special Educational Needs (SEN).

Within this perspective, the ICF model[3] is considered to be a herald of the educational perspective regarding both the Italian (Chiappetta Cajola, 2012; Ianes, 2004; Ianes, Cramerotti, 2011; Paradal et al, 2009; Miur, 2009, 2012, 2013) and the international scholastic context (Simeonsson, 2009; Hollenweger, 2011). In fact, within the dialectic on Special Educational Needs, the ICF model offers a relevant input (Simeonsson, 2003; Florian *et al.,* 2006; Reindal, 2008) through the presentation of a theoretical and practical model based on human rights (UN, 2006). Such model can be profitably integrated with the current scholastic procedures used in order to promote the receptiveness and the participation of the students in the field of the inclusive perspective[4]. Through the use of several categories that describe the characteristics of children, teenagers and context, the ICF-CY allows the collection of data regarding the human functioning with a

1 "A version of the ICF for children and youth, ICF-CY (WHO, 2007), expanded the content of the four components by including documentation of child characteristics from infancy through adolescence. (…) The conceptual framework can guide a holistic and interdisciplinary approach to assessment and intervention based on the dimensional taxonomy of human functioning." (Simeonsson, 2009, p. 71).

2 The researches are the followings: A) *Inclusive teaching: the new technologies in the ICF-CY*, (Chiaro, 2015); B) *Identification of guide lines to certificate competencies of pupils with disability: the use of ICF-CY categories in the inclusive perspective* (Education Department's research, RomaTre University (full results available in Chiappetta Cajola, 2015); C) *Approachs for support activities in the inclusive perspective: the expertise of support teacher in lower secondary school* (Rizzo, 2014).

3 "The ICF-CY offers an alternate approach yielding a profile of limitations of functioning, activities, and participation. Further, it emphasizes the identification of environmental factors that may influence such functioning with implications for planning individualized interventions" (Simeonsson, 2009, p. 72).

4 "The ICF-CY offers a conceptual framework and a common language and terminology for recording problems manifested in infancy, childhood and adolescence involving functions and structures of the body, activity limitations and participation restrictions, and environmental factors important for children and youth. With its emphasis on functioning, the ICF-CY can be used across disciplines, government sectors and national boundaries to define and document the health, functioning and development of children and youth" (WHO, 2007, p. XII).

multi-dimensional and a collaborative approach that involves scholastic, healthcare professionals, and families. It also allows the organization of such data, thanks to a system of qualifiers that specify whether the interaction between the individual and the environment is problematic or positive.

Within this view, despite some criticism on the fear of new labeling and consequent discrimination, the ICF-CY proves to be at present the most effective and widely shared tool to identify special individual needs without reducing them to special problems of the individual, but rather extensively connecting the functioning and the disability to environmental factors in a holistic and interactive view of the individual himself.

Among the factors that led to draw the attention on the need to obtain methodologically valid knowledge, a significant contribution comes from the perspective of Evidence Based Education, an orientation that, while animated by different approaches, is engaged in the construction of a shared scientific knowledge, through the production of clear synthesis of knowledge, such as systematic review and meta-analysis[5] on the efficacy of different educational choices (Calvani, 2012; Vivanet, 2014). Supporters of this point of view want to promote a culture of evidence to sustain the various learning activities taking into account that an incorrect data collection, an inadequate presentation or an inappropriate statistical analysis do not make it possible to understand and check the results, or the comparison with other educational research analysis, as required by the recent research orientation Evidence Based Education (Hattie, 2009, 2012; Calvani, 2013).

Although the ICF-CY is spreading within the procedures of assessment managed by the Health Service (Ianes, Cramerotti, 2009) and certain Italian researches have verfied his efficacy in order to reduce the barriers in the environment and to improve scholastic participation of students with disability (De Polo et. al. 2009), the application of the ICF-CY within the schools is still limited, (Chiappetta Cajola, 2015) even if the diffusion of ICF research and the use in a great variety of fields and scientific journals is a proof that a cultural change and a new conceptualization of functioning and disability is happening (Cerniauskaite, 2010).

2. The research process within the inclusive perspective: features of Italian model

As in all experimental scientific researches, in special education science as well, the knowledge of concepts and statistical methods to deal with different types of problems is essential: from support indicators to the re- definition of

5 "A systematic review is a secondary survey method, characterized by the adoption of a standardized protocol, which aims to collect and analyze all of the most significant studies on a given topic/research problem. (Chalmers & Altman, 1995; Oakley et al., 2005). A meta – analysis is a statistical technique for data synthesis, expressed in terms of effect size (Glass, 1976)" (Calvani, et al. 2014, p. 231) (trans. by authors).

instructional design, to indicators dealing with assessment; from indicators related to research methodology to those related to evaluation and to the inclusive educational system as a whole (Domenici, 2006).

In order to define specific indicators and to validate and interpret the results of experiments in an inclusive perspective, a strict planning is needed throughout all phases of the research, from the definition of objectives and data collection, to their description, analysis and interpretation of results (Mitchell, 2014; Newbold, Carlson, Thorne, 2010, Hattie, Gan, 2011; Chiaro, 2012; Hattie, 2012; McMillan, Schumacher, 2013).

In addition, it is essential to deepen the relationship between research methodology in general and inclusive teaching in particular, mainly at microsystem level, to assess and validate the effectiveness of the educational experimentation and innovative designs concerning students' learning, specifically focusing on the implementation of education for pupils with SEN in the mainstreaming. As the international scientific community, the Italian community too widely debates on the change of perspective from the idea of integration to the one of inclusion (Avramidis, Norwich, 2002; Booth, Ainscow, 2014). This process is not only based on strategies aimed at bringing students with SEN to be as similar as possible to other students, measuring the distance from a supposed standard of adequacy, but it is also based on the recognition of the importance for all individuals, students with SEN in primis, of full participation in school life (UNESCO 2005, 2009). In fact, according to the inclusive perspective, the schools must remove the obstacles to learning and to participation of students and enforce the facilitators in order to improve as more as possible inclusive cultures, policies and practices.

The Italian school is strongly looking to achieve the inclusive perspective because in this country the expression "students with SEN" (UNESCO, 1997; OEDC, 2005-2007) conveys the great heterogeneity of pupils attending the mainstreaming. In Italian classes, in fact, to encounter with student having every kind of disability (mental or motor deficit, autism, down syndrome ecc.), Learning Disabilities (e.g. dyslexia, ADHD, ecc.) or social disadvantage is common (ISTAT, 2016).

Recently, an important Italian national research has attested a big gap between the normative indications and what is actually done in the schools for inclusion (Associazione Treellle, Caritas Italiana, Fondazione Agnelli, 2011). Within the more critical elements are the lack of cooperation between subject teachers and support teachers to plan the Individualized Educational Plan (Chiappetta Cajola, 2007; Ianes, Demo, Zambotti, 2010) and the increment of the activities realized outside the class (Demo, 2014).

As a matter of fact, stakeholders need to have tools and methodology available to work and to collect data in a collaborative way and a group of Italian researchers[6] are dealing with, also in the field of special education (Calvani, 2012; Chiappetta Cajola, Rizzo, 2014, 2016; Chiappetta Cajola, 2015, Chiappetta Cajola, Chiaro, Rizzo, 2016; Cottini, Morganti, 2015; Rizzo, 2015, 2016; Chiaro, 2014, 2015), the identification of tools and methodologies by EBE perspective that

6 The Society for Learnining and Istruction Informed by Evidence (SAPIE) was founded in 2015 (www.sapie.it).

permit the collection of information relating to students and context and, therefore, to offer schools a range of educational and evaluative design choices, able to promote a comprehensive approach and take the most effective decisions jointly in an inclusive perspective.

3. ICF-CY to support EBE research and instructional design

In this context, the use of the ICF-CY in all phases of a EBE research process becomes more than relevant, in the definition of theoretical framework, aims, hypothesis and methods of data collection and analysis.

The ICF-CY conceptual framework introduces important elements of systematic scheme, language universality and information recording, within an integrated approach in a multidimensional model of functioning and disability. In particular, using the required common language (Simeonsson, Simeonsson, Hollenweger, 2008), it is possible to provide a scientific basis to understand and compare different experiences of learning design within the same class or between classes of the same school or different schools at macro-system level. The benefits of ICF-CY in the early stages of instructional design allow us to consider the various existential dimensions of the individual, not only how individuals live with their disease, but also how to establish and implement appropriate educational plans aimed to improve the quality of their lifetime.

In Italy, recent regulations of the Ministry of Education (MIUR) promote an increasingly widespread and radical use of ICF-CY also in educational institutions and as a basis for designing inclusive education with special reference to the "Environmental Factors" that characterize the school context.

The ICF-CY classification fully reflects a new model of disability, promoting a comprehensive approach, which includes global capabilities, the various resources of an individual, while keeping in mind that the personal, natural, social, and cultural context clearly affects the possibility of expression of these resources.

According to this approach, considering the various aspects related to a person's health condition and the relative context, disability is defined as "a health condition in an unfavorable environment" (WHO, 2001, 2007).

In this framework, context plays a major role, where various elements can be qualified as a "barrier" if they obstruct the activities and participation of the person, or as "facilitators", if on the contrary they encourage activities and participation. In particular, the standard scheme provided by the ICF-CY tool for teachers and educators allows to observe and distinguish the "functioning" of the child or adolescent in an integrated view of the different aspects of growth and in different environmental contexts, so that it can be used operationally as a basis for designing inclusive education[7].

7 For example, using a standard language it is possible to detect unambiguously and systematically different aspects in the daily learning modules, such as: whether and how the child or adolescent accesses an educational program, whether and how he/she goes from one level to another, if

The use of the ICF-CY as a tool to support an inclusive education design highlights a new dynamic development between the Functional Diagnosis, the Dynamic Functional Profile, the Individualized Education Plan and life plan, as it extends the concept of Individualized Education Plan even beyond the school term in a perspective of inclusive educational guidance (Chiappetta Cajola, 2015); furthermore, it can be referred to all students with or without SEN. Operatively the use of the ICF-CY helps to describe the student with regard to the difficulties he/she might experience in the fields of education and extracurricular activities, even as far as his/her development potential in the short and medium term is concerned, thereby putting in a curricular perspective the objectives for development areas (sensory, motor-praxis, neuro-psychological, emotional and relational, communicational, autonomy related etc.) (Chiappetta Cajola, 2012).

In the context of a gradual and continuous improvement required by the educational processes in an inclusive perspective the ICF-CY is a potential synthesis generator of reliable and rigorous knowledge in an EBE perspective (Chiappetta Cajola, Rizzo, 2014, 2015; Chiaro, 2014, 2015; Chiappetta Cajola, Chiaro, Rizzo, 2016), in order to integrate the results obtained from the research with specific educational planning to improve its effectiveness and to activate a virtuous circle of mutual influence relationships (Calvani, 2012; Cottini, Morganti 2015).

A study realized in several nursery and in infant schools of Rome (Italy), has illustrated that using tools based on ICF-CY allowed the subject and support teachers to observe each child with disability playing and to notice the weakness of the educational context (Chiappetta Cajola, Rizzo, 2014).

According to this framework, in the field of educational research and inclusive teaching, the use of Core Set[8] based on ICF-CY (Chiappetta Cajola, 2015), on one hand supports data collection about the person, the context and about their interaction; on the other hand, it permits to have an unambiguous language to describe the condition of people with disability overtaking linguistic ambiguity typical of special education that makes the sharing of data and information more difficult (Calvani, 2012; Chiappetta Cajola, 2014).

4. Research methods

In this paper we will refer to three researches: Research A, Research B and Research C. Objectives, methods, research questions, results analysis and their interpretation will be described for each research.

he/she makes or not progresses within a school education program, if he/she terminates an educational program or some school stages and so on.

8 The definiton of Core Sets, that identify within the common curriculum several abilities and competences in line with the educational outcomes, is considered by UNESCO an instrument that can implement the quality of the curriculum itself (http://www.unesco.org/new/en/education/themes/strengthening-education-systems/quality-framework/core-resources/ curriculum/).

According to the ICF-CY conceptual framework and the EBE perspective, three studies have been designed to obtain a composite overview from which we can highlight the following research questions: the current level of knowledge and use of this classification by the teachers of the Italian school; the possibility to implement such use by means of appropriate teachers' training activities; the possibility to collect, pre and post specific support activities, integrated data about activity and participation of all students (L.104/92; MIUR, 2009).

The research activities have been developed, as the World Health Organization urged strongly to do, in order to investigate ways to clarify and expand the possibilities for the use of ICF-CY, with particular regard to the use of the codes and their "quantification" (through ICF "qualifiers"), the interpretation of categories and the development of "additional qualifiers" (WHO, 2007, pp. 220 e 231).

4.1. Research A: "Didactic strategies of inclusion: new ICF-CY technologies"

This research has been designed by using the mixed methods approach, a methodology that involves collecting, analyzing and integrating quantitative (e.g., experiments, surveys) and qualitative (e.g., focus groups, interviews) research in a single study or a program of inquiry (Creswell & Plano Clark, 2011). In particular, among the different methods, an integrated or concurrent nested design[9] approach has been chosen, which has a primary method that guides the project and a secondary database that provides a supporting role in the procedures. Given less priority, the secondary method (quantitative or qualitative) is embedded, or nested, within the predominant method (qualitative or quantitative). In this research plan the first set of data collection has concerned a longitudinal or diachronic quantitative research in order to measure any changes in time of the same indicators observed on the same cases under investigation (Corbetta, 2003, vol. II, p.194). The choice of the method has been consistent with the main purpose of the study related to the possibility of evaluating in the sample[10] of teachers involved in the training course, the presence of the relationship/impact between a participation in a training course with partial use of new technologies (blended) and an inclusive educational design in the ICF-CY perspective.

Particularly within the conceptual framework of the ICF-CY, the environmental

"Potentially useful implementation of the *ICF-CY* is the development of "core sets" of codes to summarize an individual's functional abilities. A core set consists of selected *ICF-CY* codes that serve as indicators of functioning for a specific condition. (…) The development of *ICF-CY* core sets related to intellectual and developmental disabilities could facilitate the application of the *ICF-CY* in multidisciplinary practices of assessment and intervention" (Simeonsson, 2009, p. 72).

9 Creswell and Plano Clark described four mixed methods research designs referred to as strategies of inquiry that guide the construction of specific features of a mixed methods study: concurrent triangulation design, sequential explanatory design, sequential exploratory design and integrated or concurrent nested design. For further details see Creswell & Plano Clark, 2011, pp. 73-76.

10 Sample: Teachers participating to the Master «Didactic and PsycoPedagogy for pupils with Learning Difficulties» (2011/2012) at RomaTre University. Sample Size: 105 teachers (not probabilistic sample) (Cohen et al*.,* 2007).

factors[11] have been considered as facilitators of the "functioning" of the pupils in a dynamic-evolutionary sense, included in the chapter "products and technologies" in which the code e130, specific for education, includes "Equipment, products, processes, methods and technology used for acquisition of knowledge, expertise or skill, including those adapted or specially designed" (WHO, 2007, p. 194). Such code includes general, assistive products and technologies for education also by referring to the need to use compensatory equipment and assistive technologies for students with SEN.

The teacher training has been considered in the framework of the communities of practice (Wenger, 2006), consequently the research's goals were mostly about two macro-areas: the former examines the specific aspects of the teachers' motivations towards the participation to the training course in light of the LifeLong Learning, with a specific reference to the role that they attribute to the new technologies used within the school planning; the latter aims to analyze the professional behavior of the teachers during the everyday activities in connection with the process of inclusion of the students with SEN and with the use of the ICF-CY classification during the phases of the school planning.

The two surveys have been conducted by a semi-structured interviews[12]: the

11 "Environmental factors are defined as 'the physical, social and attitudinal environment in which people live and conduct their lives'. The person-environment interaction implicit in the paradigm shift from a medical to a broader biopsychosocial model of disability requires special attention to environmental factors for children and youth. A central issue is that the nature and complexity of children's environments change dramatically with transitions across the stages of infancy, early childhood, middle childhood and adolescence. Changes in the environments of children and youth are associated with their increasing competence and independence. The environments of children and youth can be viewed in terms of a series of successive systems surrounding them from the most immediate to the most distant, each differing in its influence as a function of the age or stage of the developing child. (…) The young child is significantly dependent on persons in the immediate environment. Products for personal use must be adapted to the child's developmental level. (…) For older children, the environments of their everyday life are closely connected to home and school and, for youth, gradually become more diversified into environments in the larger context of community and society. Given the dependence of the developing child, the physical and social elements of the environment have a significant impact on its functioning. Negative environmental factors often have a stronger impact on children than on adults" (WHO, 2007, p. XVI).

12 The questions aimed at the knowledge of the following aspects: the students' diversities, the potential planning tools for school inclusion: the available equipment supplied by the school and the possibility for them to be used during the school activities: the teachers' expertise about the ICF-CY classification as a planning equipment and his practical use during school activities; the level of training regarding technologies and teachers' expectations that follow the participation to the attendance to the Master; the teachers' point of view about the role and the relevance conferred to technologies during the school planning.
Particularly this last aspect has been observed through the use of a Likert scale with 5 modes of answering (Corbetta, vol. II, 2003). Fourteen items have been identified: current schools teach how to efficiently use PC and the Internet; digital competencies are essential in the present society: the use of technologies effectively helps the inclusion of students with disability; the role of technologies during the phases of school planning for students with SEN is important; it is not necessary that all teachers are familiar with the technologies for students with SEN; schools should own assisting technologies for students with SEN; all teachers should use didactic technologies during their daily learning activities; the teachers need to be trained to how to use

first at the beginning of the training (June, 2012); the second at the end of the training (December, 2012). The research design, considering the conceptual framework of the Evidence Based Education, which mainly accept Randomized Controlled Trial (RCT)[13] sampling plans, has considered a less "rigid" sampling design, since the EBE can "... also accept almost experimental or empirical systematic surveys or observations collected under controlled conditions ..." (Calvani, 2012, p. 26).

The second set of data collection has concerned a qualitative research by the selection and the analysis of the final thesis written by the teachers at the end of their training[14]. The most significant thesis has been used for supporting the quantitative analysis and it focused on teaching inclusive design, which have considered the new technologies according to the codes provided in the section "Products and Technologies" of the ICF-CY.

4.2 Research B "Identification of guide lines to certificate competencies of pupils with disability: the use of ICF-CY categories in the inclusive perspective"

This research plan has involved 13 Schools in Italy in two time periods[15]. The main objectives have concerned the measuring of the diffusion degree of the ICF – CY within the school for inclusion and the identification of a proposed guide for the construction of a skills certification models on the basis of the ICF-CY.

According to the methodology used to conduct Research A, in this study the mixed methods approach has been designed. As said before, it combines quantitative and qualitative research techniques, methods, concepts or language into a single study (Johnson, Onwuegbuzie 2004). In particular, for this research the concurrent triangulation design has been considered, thanks to which qualitative and quantitative data are collected concurrently but separately.

Two different surveys (the former qualitative, the latter quantitative) have been simultaneously conducted and the data collected have been integrated in the last phase of analysis of the results (Creswell, Plano Clark, 2011).

technologies; the use of didactic software should be limited to specific occasions, with both students with SEN and with other students. Schools should periodically arrange training courses on technologies for students with SEN; the design of e-learning platforms that follows the criteria of inclusion represents an advantage for all users, regardless of the attendance of students with SEN; the acquisition of digital competencies must be a priority within the planning of learning paths for students with SEN; the e-learning system is an essential strategic resource for the training of teachers.

13 The RCT method employs an experimental group and a control group randomly. Randomization concerns the random choice of the elements that go to constitute the sample.

14 Within the sample of the quantitative survey (105 teachers) all thesis have been examined, in order to verify the use of technologies in the inclusive school planning. Four of these thesis represented the same amount of case studies.

15 The two surveys have been conducted from October to December 2012. 13 schools have been considered. 13 principals have been interviewed for the qualitative research and 408 teachers have been interviewed for the quantitative research (non-probabilistic sample). For further details about the methodology see see Chiappetta Cajola, 2015.

The quantitative survey has been carried out according to the theoretical perspective of descriptive research using a structured questionnaire.

As foreseen by the research plan, teachers have been provided of two structured questionnaires; one for teachers working in primary and lower secondary schools, the other for teachers in upper secondary schools. The thematic areas of these two models, which are defined coherently with the research goals, have been the following: a) attributed data regarding the interviewed teachers; b) data regarding the school planning for students with disability; c) evaluative strategies used for students with disability; methods and equipment; d) methods used to certify the competences of students with disability; e) expertise and application of the ICF-CY.

The qualitative survey has been conducted through face to face interviews using the support of a semi – structured questionnaire. (McMillan & Schumacher, 2013).

The thematic areas concerned: a) date collected in schools, with particular reference to the presence of students with disability, support teachers or other professionals b) planning of educational activities, also the ones specific for school inclusion; c) expertise and application of the ICF-CY; d) methods used to certify the competences of students with disability.

4.3 Research C: "Approaches to support activities in the inclusive perspective: the expertise of the support teacher in lower secondary school"

This research has been designed by using the method of Design-Based-Research (Dede 2004, 2005; Wang, Hannafin 2004; Nelson et al. 2005; Pellerey 2005, 2011). It has employed the specific expertise[16] of the support teacher to innovate the curriculum of classes attended at least by one student with mental retardation (Rizzo, 2015, 2016)[17].

In three lower secondary schools, during the year (2011/12) teachers adopted a specific meta-model that researcher designed to realize innovative support activities. These activities concern the realization of interdisciplinary workshops, managed in a playful way and addressing all students, in which the student with disability can systematically interact with his classmates for a consistent amount of time[18].

16 The debate regarding the use of the notion expertise in the educational field is still open (Calvani 2007, Engeström *et al.*1995 Ajello 2002). The article refers to the professional competencies of the support teacher, derived from his "double training" as both subject and support teacher. A teacher leadership derives from such expertise, leadership that promotes the functional participation of all teachers in order to create more inclusive educational activities (Rizzo 2016).

17 The research involved a non probabilistic sample (Cohen et al, 2007), composed bt three schools located within the Province of Rome (Italy), a total of 3 classes of intervention and 7 parallel classes, 95 teachers and 187 students of age 11-15, 12 of whom with disabilities. The schools are not identified by their name but by a number for the protection of the privacy of the participants.

18 See Rizzo (2016) for the accurate description of criteria and variables of the meta-model.

In the ICF framework, these activities are considered to be an essential Environmental Factor to facilitate learning and participation of student with mental retardation in a inclusive perspective.

Particularly, the activities comply with the already quoted environmental factor "products and technology for education" (e130).

The research had ascertained whether an improvement in school inclusion could have been possible by changing this environmental factor and therefore by editing the didactic activities during 10% of the time used for leaning (about 100 hours per year). In order to verify the efficacy of this intervention, given the complexity of the paradigm "school inclusion", at the beginning and at the end of the year, according to the mixed-method criteria (Johnson & Onwuegbuzie 2004), data have been collected in relation to the following five areas of interest: type of support activities; their distribution within the curriculum; implementation of inclusive cultures, policies and practices; general aspects of school life; students' capability to participate and their learning abilities; association within the class[19].

Particularly, the ICF-CY has been employed in order to measure, in relation with the consistent modification towards a more facilitating impact of the environmental factor e130, the potential improvements connected with the level of participation of the students. Teachers, starting from their own professional evaluations, have registered the collected data according to the qualifier "performance" that "describes what an individual does in his or her current environment" (WHO, 2007, p. 13) [20]. In their observations, they considered the impact of the environmental factor related to the modification of the organization concerning the support activities, that represents the independent variable of the research project.

For this purpose, three chapters have been chosen for the quantitative observations, regarding "levels of participations and learning of the pupils", chapters that have been considered particularly relevant in the perspective of school inclusion. Starting from pre-selected categories belonging to these chapters, a Core Set has been established. It has been used by teachers to systematically observe the performance (WHO, 2007) level of all students, including the ones with disabilities (Chart.1).

19 Among the assessment tools there are questionnaires for teachers and students from the Index for inclusion (Booth & Ainscow, 2008): the sociometric test (Moreno 1953; Trinchero, 2002; Medeghini & Fornasa, 2011); the semi-structured interviews to privileged witnesses (Corbetta, 2003; Kvale 1996).

20 According to the ICF, in connection with "Activities and Participation", data can also be collected according to the qualifier "Capacity". It "describes an individual's ability to execute a task or an action. This construct aims to indicate the highest probable level of functioning that a person may reach in a given domain at a given moment" and "to assess the full ability of the individual, one would need to have a 'standardized' environment to neutralize the varying impact of different environments on the ability of the individual" (WHO, 2007, p. 13). For this reason, teachers can only collect data regarding the qualifier "performance" that includes the environmental factors of the context.

ICF-CY chapters	ICF-CY categories
Learning and applying of knowledge	Acquiring information (d132), Acquiring language (d133), Rehearsing (d135), Acquiring basic concepts (d1370), Acquiring complex concepts (d1371), Acquiring skills to sound out written words (d1401), Acquiring skills to understand written words and phrases (d1402), Acquiring skills to write words and phrases (d1452), Acquiring skills of numeracy such as counting and ordering (d1501), Acquiring skills in using basic operations (d1502), Acquiring basic skills (d1550), Acquiring complex skills (d1551), Focusing attention (d160), Directing attention (d161), Speculating (d1631), Hypothesizing (d1632), Using general skills and strategies of the reading process (d1660), Comprehending written language (d1661), Using general skills and strategies of the writing process (d1700), Using grammatical and mechanical conventions in written compositions (d1701), Using general skills and strategies to complete compositions (d1702), Using simple skills and strategies of the calculation process (d1720), Using complex skills and strategies of the calculation process (d1721), Solving problems (d175), Making decisions (d177).
General tasks and demands	Undertaking a single task (d210), Managing one's own behaviour (d250).
Interpersonal interactions and relationships	Respect and warmth in relationships (d7100), Appreciation in relationships (d7101), Tolerance in relationships (d7102), Criticism in relationships (d7103), Social cues in relationships (d7104), Physical contact in relationships (d7105).

Chart. 1: Core Set ICF-CY used by teachers to observe pupils

The Core Sets have been presented to teachers in September, during a specific training course which lasted three hours. The compilation of the Core Sets at the beginning and at the end of the year took place during the School Council and it was coordinated by the School Governor. All the recording were realized by the teachers as a whole, who shared the responsibilities of the evaluation for the purpose of an inclusive perspective. At the end of the school year, the effectiveness of the environmental factor "innovative support activities" – regarding the participation and the learning ability codified by the ICF-CY within the Environmental Factors with the category "Products and technology for education" (e130) – has been monitored through interviews to teachers and classmates of the students with disabilities.

According to the research hypothesis, in fact, the interdisciplinary laboratory-style didactic was considered to be a real inclusive facilitator since the playful management would have positively affect the development of the students' self-adjusting and emotional-relational abilities. In this way, in a sort of virtuous cycle, the students would have developed mutual support behaviors, comprehension and reciprocal help, activating in the contest the facilitator environmental factor that the ICF-CY codifies as the category: "Individual attitudes of acquaintances, peers, colleagues, neighbours and Individual attitudes of acquaintances, peers, colleagues, neighbours and community members" (e425). It is known how the mutual support between peers, that shows itself during the educational activities, is an essential factor for promoting the learning abilities also of students with disability (Brown, Palincsar, 1987; Alfassi, Weiss, Lifshitz, 2009; Calvani, 2014).

The research aimed to clarify whether the extension of the time dedicated to the workshop activities, chosen and managed by the subject teacher together with the support teacher, using the methods that allow the student with disability to participate, have a positive effect on the performance of all students,

not only in terms of learning and applying of knowledge, but also in relation with "Undertaking a single task" and "Managing one's own behavior", and regarding the improvement of the "Interpersonal interactions and relationships".

5. Data Analysis

Data analysis is presented in order to give a contribute to the dissemination of information collected by a rigorous research design in the field of special education. These data can be compared in order to improve inclusive teaching in the mainstreaming.

5.1 Research A and Research B: data analysis

Both Researches (A and B) show an ICF- CY level of knowledge which was not particularly high: 20.0% of teachers from Research A stated to know the ICF-CY at the beginning of the training period, while this value by the Research B is a little higher (29.4%). It is important to notice that the training period on subject for inclusive education for students with SEN, has enabled teachers to acquire greater knowledge of the ICF-CY.

In fact, as it can be seen in Fig. 1, statistically significant variations were recorded for all types of answers: the positive ones increased from 20 % during the first survey to 69.6% during the second one (+49,6 p.p.); at the same time the negative ones decrease from 41.9% to 8.9% (-33,0 p.p.).

Although, from the first to the second phase of the Research A, the level of the ICF-CY knowledge increases, its use in education is nevertheless still limited, as only 6.7% of teachers who, in the first phase, said they know the classification, have also had the opportunity to be able to use it in educational practice; a similar value at 6% was obtained by the Research B (cfr. Fig. 2)[21].

The training period seems to have encouraged teachers to use the ICF-CY tool, as this value, at the end of the training Master reaches 18%.

21 The possibility to measure a decrease of the gap between what the teachers have stated to know about the ICF-CY and how they really employ it, does not depend on the realization of a research that "…is simply the check of possible solutions ..." (Lucisano, Salerni, 2012, p.28) and it aims to reveal what the interviewd have stated. In case of research A, the expertise about the ICF-CY of the teachers increases between the first and the sencond phase, and since the training attended by the teachers was not specifically about the application of the ICF-CY in school planning, the limited increase recorded for the use of the ICF-CY proves to be coherent with the typology of training the teachers have experienced.

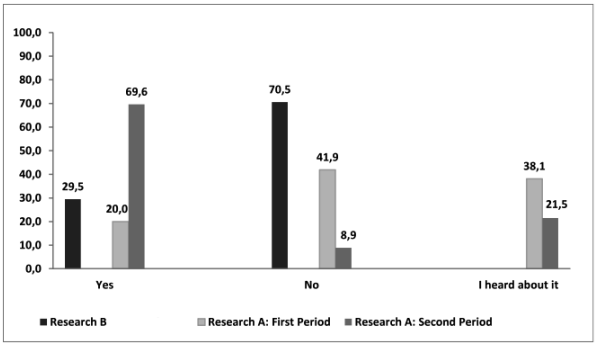

Figure 1: Knowledge of ICF-CY (V%)

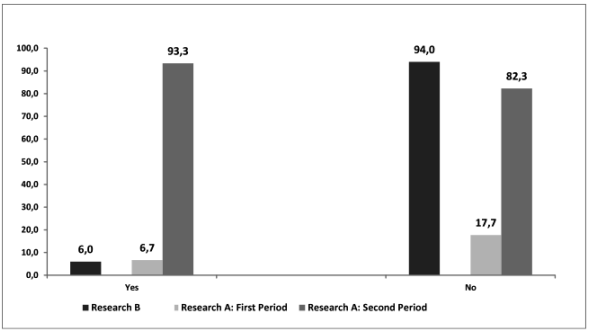

Figure 2: Use of ICF-CY (V%)

Generally 72.4% teachers from Research A (71.4% in the first period) believes that classification is an usable tool for all students, not only for students with SEN (cfr. Fig. 3), even though they highlight some areas of improvement about terminology used. This, in fact, is considered appropriate by 57.8% of respondents in the second phase of the research A (60.0% first phase), and this value is higher compared to the opinion of the Research B respondents which is of 46% and is in line with the value of 42% of those interviewees that believe it partially appropriate (cfr. Fig. 4).

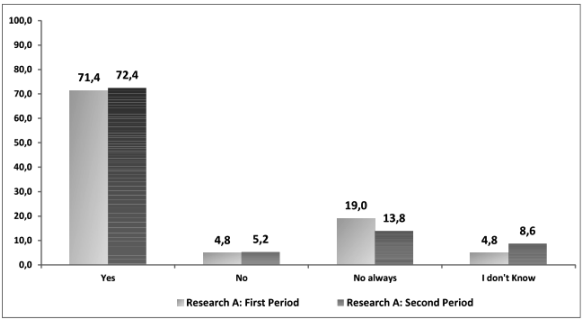

Figure 3: ICF-CY can be used for all students (V%)

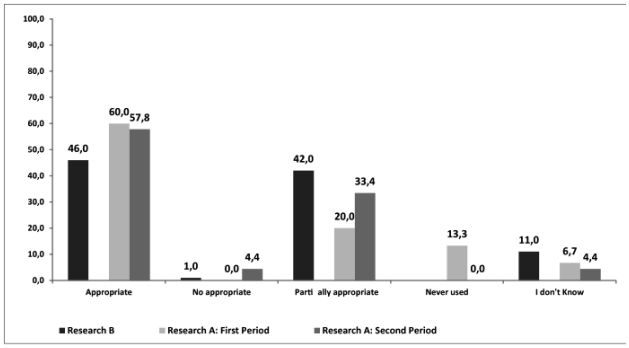

Figure 4: Adequacy of terminology used by ICF-CY (V%)

In conclusion, taken into account the values described so far related to the knowledge and usage of the ICF-CY in class by the teachers, it emerges its greater use for defining individualized/customized objectives in primary school (8 teachers cfr. Chart. 2) and for identifying the facilitators for learning and participation than other grades of schools (6 teachers, cfr. Chart. 2), as well as observed for the use of the ICF-CY for the skills certification (4 teachers, cfr. Chart. 3).

	School Grade		
	Primary	**Lower Secondary School**	**Higher Secondary School**
Systemati c Observati o	62,5% 5	42,9% 3	50,0% 2
Defi niti on of individualized/customize objecti ve	100,0% 8	57,1% 4	25,0% 1
Defi niti on of criteria assessmer	50,0% 4	14,3% 1	- -
Identi fying facilitators of learning and parti cipati o	75,0% 6	57,1% 4	50,0% 2
Total respondents	8	7	4
No Answer	193	118	78
Total	201	125	82

Chart. 2: Processes in which ICF-CY is used

	School Grade		
	Primary	Lower Secondary School	Higher Secondary School
Yes	30,8% 4	90,0% 1	33,3% 1
Not	38,4% 5	45,5% 5	33,3% 1
I don't Know	30,8% 4	45,5% 5	33,3% 1
Total respondents	13	11	3
No Answer	188	114	79
Total	201	125	82

Chart. 3: Use of ICF-CY for skills certification

5.2 Research C: data analysis

This section describes the results of the innovative support activities collected by ICF-CY Core Set. The evidences highlight the changes in order to remove the difficulties of learning and participation of pupils with disability of the intervention classes[22] on the background of the outcomes of all other students.

The survey has been realized by the class board, using the 0 to 4 scale and the note given by the ICF- CY (WHO, 2007, pp. xix-xx)[23]. In order to identify the levels of difficulty (Chart. 4), teachers interacted after their systematic observations and the results of the evaluation tests.

By using categories and codes related to the component "Activities and Participation", teachers have therefore recorded the presence of performance issues, proceeding with the collection of data pertaining to their own professional field. Such possibility has been highlighted by the classification itself, that stresses the need to consider the several elements as an always dynamic interaction, never predictable, that stimulates each user to gather explicit informations for each component, wisely avoiding the assumption of crossed connections between the limitation related to the activity and the restriction related to the participation, considering the possible impairments of Body Functions and Body Structures whose registration concerns healthcare professionals[24].

22 The Functional Diagnosis of students with disability explained the following diseases: Williams Syndrome (School n.1); Autism with moderate mental retardation (School n.2); Moderate mental retardation, emotional disease, attachment to childhood, oppositional defiant disorder (School n.3).

23 "The ICF codes require the use of one or more qualifiers, which denote, for example, the magnitude of the level of health or severity of the problem at issue. (…) All components are quantified using the same generic scale. Having a problem may mean an impairment, limitation, restriction or barrier, depending on the construct (WHO, 2007, p.237).

24 In the ICF-CY introduction we can read "to infer a limitation in capacity from one or more impairments, or a restriction of performance from one or more limitations, may often seem reasonable. It is important, however, to collect data on these constructs independently and thereafter explore associations and causal links between them" (WHO, 2007, pp. 17-8).

	School 1				School 2				School 3			
	Class 2A				Class 2D				Class 2C			
Difficulty	NO/Mild (0, 1)	Moderate (2)	Severe (3)	Complete (4)	NO/Mild (0, 1)	Moderate (2)	Severe (3)	Complete (4)	NO/Mild (0, 1)	Moderate (2)	Severe (3)	Complete (4)
Pretest	34,3%	28,1%	32,6%	5,0%	89,0%	10,0%	0,0%	1,0%	43,5%	45,7%	10,8%	0,0%
Post test	83,7%	13,0%	0,7%	2,6%	88,0%	11,0%	0,0%	1,0%	69,3%	28,4%	2,3%	0,0%

Chart. 4 Levels of difficulty present in the classes of intervention (all students) before and after the innovative support activities

The aggregated answers of all categories draw attention to the positive variations in the classes of schools n.1 and n. 3 (Chart. 4). The variations had been recorded by the whole class group of teachers using ICF-CY Core Set. In the class 2A, the *Complete difficulties* have been reduced to a half and *Severe difficulties* have been reduced from 32.6% to 0,7% (T = 2,64, p<.05).

At the same time, the value *No* and *Mild difficulties* has increased from 34,3% to 83,7% (T=-3,10; p<.05).

The class of intervention of school n. 3 (2C) reveals the same positive trend. In fact, the answers *No* and *Mild difficulties* had incresed from 45,7% to 69,3% with a significant increase of 10% (T = –1,73; p<.1).

In school n. 2, the situation has remained stationary but this result could be seen as positive since in the parallel class, of the same school, the difficulties have increased.

			Learning and applying knowledge		General tasks and demands		Interpersonal interactions and relationships	
School	Class	Difficulty	Pre test	Post test	Pre test	Post test	Pre test	Post test
1	2A	Complete (4)	41,5%	4,4%	50,0%	0,0%	30,7%	0,0%
		Severe (3)	32,4%	7,8%	50,0%	0,0%	29,8%	9,6%
		Moderate (2)	8,7%	20,0%	0,0%	20,0%	9,0%	22,2%
		NO/Mild (0, 1)	17,4%	67,8%	0,0%	80,0%	30,5%	68,2%
2	2D	Complete (4)	0,0%	5,0%	0,0%	0,0%	8,0%	0,0%
		Severe (3)	65,6%	40,9%	50,0%	40,0%	31,7%	6,7%
		Moderate (2)	6,0%	15,0%	50,0%	60,0%	0,0%	0,0%
		NO/Mild (0, 1)	28,4%	39,1%	0,0%	0,0%	60,3%	93,3%
3	2C	Complete (4)	10,9%	0,0%	50,0%	0,0%	10,1%	0,0%
		Severe (3)	30,0%	8,7%	50,0%	0,0%	40,0%	7,1%
		Moderate (2)	54,6%	50,0%	0,0%	70,0%	42,8%	29,4%
		NO/Mild (0, 1)	4,5%	41,3%	0,0%	30,0%	7,1%	63,5%

Chart 5: Level of difficulties of students with disabilities (classes of intervention)

On this background, the qualitative data about students with disability show that in each classes, the group of teachers using ICF-CY Core Set was able to collect a whole range of the positive consequences of the innovative support activities (Chart 5).

Also for students with disability, the difficulties had decreased and students had improved their performances.

Such results are confirmed by the teachers during the final interviews.
Some extracts follow closely behind

School n. 1.

«A. is more confident. He goes downstairs alone and he is able to walk around the school without any problems. If he needs something, he asks you. He can manage his agenda, before he didin't organize anything and he was always joined accompained by the support teachers. Now, he is interested in what appens and he can interact with adults and classmates and he can tell you if something is wrong. He grew up too much. Before the project this was unbelivable!»

School n. 2

«P. didin't do anythink in autonomy. He used to be always with an adult who took care of him him. He improved his autonomy and he adapted better to change.

He needed orderliness and experienced changes in a traumatic way. During the activities, step by step, he learned how to cope with unexpected changes. The project was very useful for him and made him more flexible».

School n. 3

«T.'s behavior was very aggressive and ofter extreme with teachers and classmates.

He didin't have any autonomy in social skills and in learning. During the year, he developed cooperative and helpful attitudes. Now he is kind of the "engine" of the group!».

6. Concluding observations and research perspectives

The research results offer some causes for reflection aimed at identify methods and equipments used to employ the potentialities of the ICF-CY as a tool that can help the teachers gather informations in a shared way in order to reduce the distance between teachers in order to modernize the didactic and evaluation design in inclusive direction.

The use of the ICF-CY, recorded as limited in researches A and B, showed positive results in research C.

During research C, the ICF-CY has been employed in class boards within a process of sharing and debate, which is important and in a sense unusual. In fact, in lower secondary schools, during both the delineation of the different levels of learning ability for each student and the final evaluation, teachers usually restrict themselves to only communicate the grade deduced by their observation and by subject-related tests. In this case instead, the debate has not created a simple summation of single grades, but a shared exchange of considerations to which all teachers participated in order to find a common qualification for each

performance. Furthermore, the debate has been activated in relation with the performances of students with disability, whose observation is usually delegated to the support teacher only.

This procedure, together with the phase of training expected by the plan, allows teachers to reach a higher awareness about the need to not to make their evaluations inflexible, by making them pertain to only personal and immutable characteristics of the students, but to open up, even step by step, to the fundamental role of the context. In order for teachers to understand the importance of the anthropological model of the ICF-CY, and of the fundamental role of the environmetal factors within the students' performance, it has been extremely useful to listen to the different observation each teacher has expressed about the same performance and to notice how, thanks to different didactic organization, the facilitation of learning, undertaking a single task, managing one's own behavior, and of interpersonal relationship also of students with SEN was promoted.

In this sense, it is possible to affirm that, on the one hand, a shared use of the ICF-CY categories for the observation allowed the groups of teachers to discuss the performance of students with and without disabilities, on which the action of the school is decisive, and on the other, and it helped to build operational frameworks in which the activity and participation of students connected to specific environmental factors, such as the modalities of organization, innovative or traditional, of support activities.

Such frameworks, elaborated inside of collection methodologies both rigorous and flexible, can be shared not only with families and with health workers, but also with researchers to build a reliable and usable scientific knowledge in policies and practices related to disability (Vivanet, 2013), knoledge that is still struggling to establish itself at national and international level (Chiappetta Cajola, 2014).

It is obvious how these potentialities can only be expressed after a precise training on the use of specific Core Sets in schools. Such Core Sets must be created depending upon predetermined targets and taking into account the explicit WHO' statement about application's procedures of the Classification in different contexts: clinical, regarding healthcare, educational, scholastic (Bickenbach et al., 2012).

In the framework of an analitycal and costructive interpretation of the complexity and the heterogeneity that characterizes Italian classes, the qualification, shared by the teachers, of the categories of the Core Sets available for the schools is included in the support of the so called "Ethics of dialogue" (Morin, 2015) which is the base of the governace of school inclusion (Miur, 2009). In fact, the school-related Core Sets offer many reference points to manage the observation of the student interacting with the context, and, gradually, they become a useful tool in order to create a school team "used" to identify obstacles and to promote the facilitators.

Knowing that the new bio-psycho-social model of the functioning proposed by the ICF-CY must yet be translated in operating equipment that supports the inclusive curriculum and in procedures that gather solid evidence, the use of of the Core Sets in schools, in order to help teachers interpret the process of development of the students in relation with the condition of learning arranged

by the schools, appears to facilitate the use of the ICF-CY as a conceptual planner and it starts the creation of a culture of school inclusion always more shared and the creation of a view that bears in mind the role of environmetal factors in school planning and re-planning.

Furthermore, the research shows that ICF-CY puts in contact school and academia by going beyond the margins of linguistic ambiguity that often represent the main criticality regarding the sharing of evidence based knowledge (Calvani, 2011). The tool permits to "gather reliable date of current and sought levels and to critically monitor progresses" (Hattie, 2012, p. 168) and it shows the way to the valorisation of the context's international organization. Together with the standardized language, applicable at international level, the categorization's theoretical setting out allows the interaction between research and didactics, supporting the interpretation of date in a framework that is coherent with the inclusive perspective.

In brief, these Core Sets guide and support the systematic observation of an inclusive nature, since they present the selection of various categories and the related alphanumeric codes which are cross subjects and are valid for all pupils. In this direction, a research currently in progress at the Roma Tre University is verifying the possibility to use ICF-CY Core Sets to certify the competencies of students with disabilities. In particular, the research refers to those categories that in the Classification itself are identified and referred to as "competecies" and that are essential in order to promote the development of key competencies for lifelong learning (European Parliament & Council, 2006). For the contribution to the field test of the modality of certification in schools, there are ICY-CY Core Sets and other related operative tools that teachers can use and that are considered to be able to support efficiently schools' effort to certify the competence of students with disabilities. Given the required methodological forethoughts (Calvani, 2012), the aforementioned research assumes the EBE orientation and it aim to create and promulgate reliable forms of knowledge related to the certification of competencies of students with disabilities, in order to offer inclusive schools the chance to choose better among the most effective options and to make the appropriate decisions in this field by using the Evidence Best Practice approach (Calvani & Vivanet 2014; Chiappetta Cajola, 2014).

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