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An Ecological-Integrated Framework for an Inclusive Academia

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Abstract. This article proposes a reflection on the meanings, models and practices aimed at supporting and promoting inclusive processes in universities. A review of recent literature on inclusive cultures and practices in higher education confirms the idea of inclusion as a "universal value", albeit with different declinations, in terms of intentions, priorities and operativeness, as in the case of didactics. In general, inclusive teaching is one of the indicators of a university's inclusiveness and innovativeness, even if a 'double track' remains. The framework of the 'inclusive university as a complex ecosystem between economics and ecology [56] has guided the construction of an operational framework, consistent with an integrated ecological-relational vision of the inclusive model, and the definition of a set of related indicators that characterize inclusive teaching - specialized for all, in order to support processes that foster the collective construction of inclusive universities [1, 12].

In line with this model, two schemes have been developed for the definition of the "original" model of inclusion and for the implementation of inclusive and innovative universities (integrated model) that allow for the integration and focusing of different elements, dimensions and levels, in a single framework, consistent with an idea of special and inclusive pedagogy and didactics [10], and with the ecological-relational model. Within this model, the increasing attention paid to new technological tools is reconceptualized as a valid support for the promotion of authentically inclusive education. Tools and technologies find an epistemological position.

Keywords: Inclusive Academia; Inclusive teaching; Integrated model

[1] The article is the result of a research project joint by all authors; the writing of the paper was divided as follows: P. Damiani: Paragraphs 1 (1.1.3, 1.1.4, 1.1.5) and 2 (2.1, 2.2, 2.3, 2.4, 2.5); G. Guaraldi: Introduction and subparagraph 1.1.1; A Lotti: Subparagraph 1.1.2, Conclusions and Supervision of work; E. Genovese: Scientific Supervision. The “ecological-integrated framework” was designed and developed by P. Damiani.

1 What does "Inclusive Academia" mean?

Introduction

This paper proposes a reflection on the meanings, frameworks and practices aimed at supporting and promoting inclusive processes in universities. The main goal is to explore the characteristics of the current idea of “inclusive academia”, in order to evaluate its validity in the context of Higher Education.
A systematic review of recent literature was carried out as part of the initial phase (Work Package 1) of the research project "Innovative and Inclusive Academia", undertaken at the University of Modena and Reggio Emilia (Unimore), Italy, in the academic year 2021-2022 (P.I. A. Lotti). The Project's general objectives were: to define the framework of inclusion in Higher Education; to identify Faculty Members' perspective on inclusion; to identify teaching strategies and educational approaches valid for inclusion in HE; to plan and implement Faculty Development initiatives to train Faculty members; to evaluate the impact of faculty development initiatives; to disseminate the results.

1.1 The systematic review

1.1.1 Objectives

The first module’s main objective (Work Package 1 - P.I. P. Damiani) was the identification of an inclusive framework, to support the development of a shared culture of inclusion among university teachers. More in detail, WP1 was divided into three phases with the following specific objectives:

1. To explore and review the literature on inclusive theories and practices in Higher Education in order to identify some specific characteristics of an Inclusive University.
2. To identify a framework for an Inclusive University or Academia.
3. To define inclusive teaching and to identify approaches and strategies consistent with the outlined inclusive framework.
4. To identify the principles, constructs and common elements considered sustainable and necessary (essential and characterizing) to support and promote the inclusive development of universities.

1.1.2 Methods

In a research context, frameworks are presented in peer-reviewed articles that aim to conceptualize Inclusive Academia or Universities. To identify these frameworks, we performed a search in May 2022 in a research-focused electronic database (Google Scholar). Based on discussions in the research team defined the following search terms for literature search: (*Inclusive teaching) OR (student diversity) OR (Universal Design for Learning) OR (Equity in University) AND (Higher Education OR University) AND (model OR framework).*

To reduce the number of irrelevant results the first two steps of the search terms were required in the titles of the search results.
After removing duplicates, 90 records remained. These records were screened based on initial inclusion criteria: records had to be in English or Italian, published between 2018 and 2021, include a framework for Inclusive University or Academia.
Based on these criteria, the authors independently judged titles and abstracts of a random sample of 10 records. There was a 90% agreement rate and after discussion full agreement was reached. Subsequently we asked our partners in the Inclusive and Innovative Academia project to identify possible other terms. They suggested to include also*; Culturally Relevant Education; Culturally responsive teaching; Equitable learning environment; Social differences.* After assessing the records from the reference searching and other Work Packages' leaders' consultation, using the in- and exclusion criteria, a further 21 records were added that were eligible for review.

Table 1: The Literature's review process

1. IDENTIFICATION
Records identified through database searching (n =150)
• Google Scholar (n = 150)
2. SCREENING
Records after duplicated removed (n = 90)
Records screened (n = 150)
Records excluded (n=60)
3. ELIGIBILITY
Full-texts records assessed for eligibility (n = 59)
Full-texts articles excluded (n = 20)
Remaining records from database searching (n = 39)
Additional records (n=20) after screening and assessment of eligibility through: *Culturally Relevant Education; Culturally responsive teaching; Equitable learning environment; Social differences*
4. INCLUDED
Records included in final review (n = 59)

Although we followed the above procedure, there are some limitations and critical issues. Through the use of strings on Google Scholar we found a very high number of results. The consequent choice to limit the search to titles containing all the key words has, on the contrary, led to very few results, so articles whose titles referred generically to inclusion processes in Higher Education were also selected. For this reason, an analysis sheet was used, constructed ad hoc, through which to detect whether there was an explicit or implicit reference to the assumed inclusion model in the text.

1.1.3 Results

From a research point of view, the use of broad and complex concepts, such as that of inclusion and the constructs that identify the "categories of differences" of students (and people in general), in addition to generating cultural and epistemological problems, makes it difficult to find disaggregate and compare data from different contexts and countries (in line with what was highlighted by the Eurostudent 2008-2011 final report), beginning with the difficulty of creating a common definition of the construct of disability [50, 54]. Even the term Special Educational Needs or SEN does not have the same meaning in different countries. Sometimes this definition also includes students with disabilities, in other cases only students with learning difficulties and at other times foreign students or excellence [24]. Upstream, it is necessary to take into account the recent strand that problematises the very concept of inclusion, highlighting its conceptual and operational criticalities and moving towards its integration and/or overcoming [34 -35-66, 36]. It is important to mitigate the risks of an exclusive and totalizing use that does not support the co-presence of the possible horizons of meaning for new communities built on different assumptions of human coexistence [55] and is not consistent with the 'new' paradigms of development and human rights (see Amartya Sen and Martha Nussbaum) enshrined in the 2006 UN Convention [65].

Through the compilation of the analysis form, data was extrapolated on the definition and/or idea of inclusion (explicit or implicit) emerging from each selected article, the issues dealt with (the subject of the article) and the scope/areas of application and development.

The three macro-categories (dimensions) of the Index for the Inclusion triangle were used to collect the latter data (the areas of development of inclusive processes):

- cultural area – “creating inclusive culture” (reflection and development on/of models, theories, concepts on the Inclusive University);
- policies – producing inclusive policies” (design/activation of policies at a macro and micro level);
- practices – “evolving inclusive practices” (experiences, experimentation of methods, strategies, tools).

> “The three dimensions are all necessary to the development of inclusion […] However the dimension “creating inclusive culture” is placed, deliberately, along the base of the triangle” [13].

Overall, a variety of definitions and interpretations of the idea of inclusion and a multiplicity of declinations and areas of applicability have emerged, making a linear comparative analysis of the results difficult. It should be noted that in most of the articles an explicit definition of inclusion and/or of the inclusive model of reference is absent; inclusion, as occurs in transnational institutional documents, is in fact assumed as a universal value and to an intrinsically positive end, which takes shape through the identification of the means deemed useful, necessary, sufficient to achieve it, sometimes without even entering into the merits of their scientific justification or contextualizing them within the system of local values and constraints [56]. In some articles the need to identify clear indicators for the observation, description, construction and evaluation of inclusive processes and systems is made explicit, which are still scarcely present in Italy, both at school level [37] and especially in Higher Education (Conferenza Nazionale Universitaria Delegati per la Disabilità – CNUDD [21].

The topics dealt with in the analysis sheets were then grouped into 5 categories: inclusive teaching strategies; survey of the literature on Inclusive Education; research on inclusive practices; theoretical contribution on the inclusion model; inclusive policies. Often, the arguments are focused on political and/or methodological dimensions that concern a specific aspect (e.g. financial aid, tutoring) or on a specific target student population (students with hearing disabilities; african americans students), thus being difficult to generalize. Moreover, the various contextual elements that come into play as facilitating or hindering variables for inclusion are mentioned, but rarely explicitly described in relation to students' global functioning and/or disability outcomes, i.e. in terms of contextual factors in the light of the ecological-relational and biopsychosocial perspective of the ICF model [72]. The articles that explore the topic of research in inclusive education confirm what has already been highlighted in the literature; research is not limited to the analysis of the physical presence of students with disabilities and/or Special Educational Needs or on the processes of differentiation and individualization put in place to help them learn in common contexts, but also aims to identify segregation and exclusion devices and mechanisms that continue to discriminate against those who are recognized as 'different' with respect to a dominant concept of normality, ability and functioning [61]. Furthermore, the review confirms the fact that research in inclusive education tends to recognize a new role for people with disabilities and/or students within the research process [24].

1.1.4. Discussion

The results of this research confirm what some authors have already pointed out regarding the lack of studies on the "inclusive university" - compared to the abundance of international studies on "inclusive schools" - and the priority is to clarify and share the underlying ideas and models of inclusion [24-26, 36].

"It is extremely important how we define the concept of inclusive education, because the way in which we interpret this term also depends on the type of research that

is conducted, the research questions investigated, the way in which data is collected and the results interpreted. In fact, the term inclusion has been colonized by very different supporters (from special education to Disability Studies) influenced by different logic of thought and approaches [14-69, 25] so much so that debates on the development of inclusive education have often turned into clashes on mere ideological positions rather than a research field based on constructive confrontation" [24].[2]

Primarily, a specific emerging element of complexity, which deserves to be addressed in detail, although at present still seems to be undervalued, consists in the detection of a double track in the interpretation of the recipients of studies and research, but also of inclusive policies and practices in universities; basically, the question of *who are the subjects of inclusive processes*, or *who to include*?, remains open, whereas most research attempts to construct answers on *how to include*.

In this sense, it is possible to subdivide the articles examined in the light of a dual - and mainly dichotomous - meaning, "wide" and "limited", of inclusion. On the one hand, one finds articles that consider inclusion as a topic dedicated to one or more "categories" of special students with specific characteristics, mainly students with disabilities and/or Learning Disabilities, but also ethnic minorities or other variegated forms of vulnerability, particularly in the articles from the English-speaking area; on the other hand, one finds articles that treat the various issues related to inclusion in universities as processes that concern, without distinguishing, all students.

In order to arrive at the definition of an idea of inclusion that is valid and representative of the complexity detected, which would make it possible to outline a coherent framework for the development of the subsequent phases of the "Innovative and Inclusive Academia" project (WP2-WP5), the main recurring elements were identified in the articles analyzed, recognizable as essential elements characterizing the idea of inclusion at the basis of an inclusive training system including Higher Education. They are summarized below:

- *Inclusive culture and the inclusive value*. Recognition of inclusion as an inalienable universal value and right and as an indicator of the quality of life of individuals and of school and university systems, as enshrined in the 2006 UN Convention [65]. Inclusion calls into question, and is closely interconnected with the other fundamental values that place the person at the center, such as freedom, development, well-being [60-59, 48], participation [73, 29], equity in diversity [17, 65], justice and flourishing life [60, 48] and, last but not least, happiness and contentment [31].

- *Inclusive policies and the community dimension*. As Santi and Di Masi [56] point out, the construction of the 'good university' [70, 11] based on the fundamental values mentioned above requires critical reflection and focused design on actions and tools to foster student participation at the university level, in order to ensure genuine

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emancipatory policies and not merely assistance, in line with an advanced inclusive model. It is necessary, for example, to avoid the risk that the University Offices for Services for Students with Disabilities and Learning Disabilities present in many universities are transformed from emancipatory instruments into tools for managing difference and preserving and immunizing university institutions. Good inclusive universities characterize themselves as contexts for the development of thriving communities, beyond the individualistic and competitive vision.

- *Inclusive practices*. Accessibility to participation and knowledge. In education and academia, accessibility translates into being a system that is understandable, reachable, and usable by the widest possible number of students [4] at all levels, through approaches based on Universal Design principles.

- *Personal Life Project*. Recognition, enhancement and realization of fundamental life dimensions, still misunderstood by educational and training systems, such as values, rights, well-being and happiness [8]. At the center of this declination of the idea of inclusion is each student, regardless of his or her starting condition, and his or her life project [56], as essential components of the curricula.

- *Inclusive didactics.* Inclusive teaching understood not as a set of specific contents, but rather as a methodological orientation, an operational style to be adopted in daily practice and in the management of all disciplinary curricula, suitably adapted with an approach that facilitates the participation and success of every learner, consistently with the principles of Universal Design for Learning [22]. Already in 2007, Galliani [31] pointed out that the challenge is to move from teaching based only on curricular knowledge to an inclusive didactics of the social construction of 'competences for life', through communities of discourse and practice, real and virtual, in the networked 'connected' society.

The last phase of the literature analysis was devoted to an in-depth study of inclusive didactics, in order to identify its essential, indispensable and generalizable elements, and in view of the fact that the "Innovative and inclusive Academia" Project was based on the survey and implementation of didactic practices in universities. To this end, all articles dealing specifically with didactics, didactic architectures and inclusive strategies (32 articles) were surveyed and analyzed, from which three thematic areas emerged:

a) The first refers to the presentation and/or experimentation of specific architectures and strategies considered capable of fostering inclusive processes. These include collaborative didactics in its various forms, from cognitive and metacognitive didactics to didactics using digital technologies in an inclusive function, metacognitive and self-regulation strategies, formative feedback, socio-emotional education, collaborative knowledge construction (peer tutoring; mentoring; modeling...), the creation of a positive climate [22].

b) The second concerns the design and organization of approaches, spaces, tools and actions to remove the obstacles to learning and participation that people encounter and the valorization of positive actions and practices that put passionate learning facilitators at the center [4].
c) The last one focuses on emancipatory strategies and tools centered on rights and values [56].

One important aspect concerns highlighting the actual nature of inclusive didactics, with reference to inclusive school and university systems: didactics is defined in literature as one of the indicators of the inclusiveness of school and academic systems.

As is clear from the above data, inclusive teaching is an essential, indispensable aspect, but it is not the only one; it must be considered in its relations with the other aspects. Inclusive teaching is, in fact, interconnected with different dimensions and processes at different levels, in line with the ecological-relational model; these include teacher training, the related policies and the design and implementation of adequate learning environments, material, digital, physical, social, cultural...

In the articles, the importance of the physical environment, the qualitative interaction between teachers and managers, curriculum design, and the classroom climate are highlighted. The prospect of inclusion for all students passes through a refinement of teaching methods, which must promote the active role of each individual by facilitating the participation of all, as well as stimulating interactive and mutually supportive relationships [23].

It is worth pointing out here that inclusive education includes assessment as an essential integral part that nevertheless requires clear and systematic thematization. In fact, as Mengoni et al. [44] note, while many studies have addressed processes and tools for inclusive teaching only a few research papers have focused on the issue of inclusive university assessment [58, 21].

1.1.5 Conclusion

In conclusion, the analysis of the literature carried out confirms the co-presence of a variety of ideas and models of inclusion and the scarce thematization and problematization of the same, even in studies and research from common disciplinary fields (pedagogical) and with similar epistemologies (based on the paradigm of human rights and Full Inclusion). All the works are based on a shared and general idea of inclusion as a value, but the inclusive model, taken up more or less consciously by researchers, practitioners and decision-makers, is declined according to variegated epistemological trajectories and orients policies, practices and the choice of inclusive strategies, which take on focuses that are not always coherent and convergent (on students, teachers, cultures, techniques, economic funds, etc...) that risk conveying epistemologies based on the "old" paradigms of assistance and integration and partial and/or fragmented approaches. An essential critical crux is the persistence of an unresolved dichotomous vision between the idea of inclusion in the university for a few 'special students' (narrow meaning of inclusion) and the idea of a universal inclusive approach (broad meaning of inclusion).

2. Towards a 'valid and integrated' inclusive university framework

In the light of the results of the review carried out, the need to define and share a complex model of inclusion and inclusive teaching in Higher Education of a multifactorial and multi-level type, capable of enhancing the different aspects (cultural, political, practical), orienting multiple supports (resources, processes and tools) in an ethical and ecological-relational perspective, is highlighted.

The value dimension underpinning it broadens the construct of inclusion by exponentially penalizing its explicit definition, even if it is possible to recognize it in the circumstances that should emerge from the concrete indications that are suggested or from the actions that are supported in related programs. In this sense, a shared (re)semanticizsation of this strongly conceptual construct would be useful to distinguish/unite it from/to other processes, in any case aimed at achieving a coexistence/compresence/contiguity between different elements/subjects, but also to decline it according to different intentions, priorities, manifestations, such as the pedagogical and didactic one [56].

As we have noted, the analysis of recent literature on inclusive cultures and practices in higher education confirms an idea of the concept of inclusion as a "universal value" and universally recognized, albeit with different declensions, in terms of intentionality, priorities and functioning, as in the case of didactics. In general, inclusive teaching is one of the indicators of a university's inclusiveness and innovativeness, even if a 'double track' still remains unresolved.

2.1. The creation of a valid and integrated model of innovative and inclusive university

The second phase of WP1 was therefore dedicated to the elaboration of a "valid and integrated" model of an innovative and inclusive university, which would be consistent with the essential aspects characterizing the most mature and sustainable idea of inclusion (valid), and which, concurrently, would contribute to overcoming the fragmented, linear and dichotomous visions found in literature (integrated), supporting and enhancing the intrinsic complexity of the topic, both at an epistemological and applicative level. The definition and sharing of a "mature and sustainable inclusive cultural model" is the first step to support the development of a genuinely inclusive university.

This was made in relation to the complexity of the contexts and the phenomena in question and of coherent teaching approaches and strategies, with the goal of supporting the development of a shared culture of inclusion among university teachers. Indeed, despite the fact that the importance of equitable access to post-secondary education has been emphasized in numerous international documents since the mid-20th century, very often the actions taken have produced "cosmetic" outcomes that are not aimed at a deeply rethinking of Higher Education systems, in connection both with earlier degrees

of education and with labor and social inclusion within "flourishing" as well as productive communities [56, 6].

Furthermore, in the context of Higher Education we detect an "additional" challenge for universities (compared to schools), with reference to the dialectic between specificity and universality that recalls the dilemma of difference [62] which is expressed in the need, on the one hand, to avoid stigmatization by categorizing individual differences in terms of special needs and, on the other hand, the need to identify specific needs in order to adequately support them with specific aids, which then risk emphasizing the differences. It is therefore central to reflect on the following questions:

Which view between specificity and universality? There is a need to create a "compromise" between an individualistic response (specific needs) and the need to intervene to create contexts that can accommodate everyone [22]; between special didactics and inclusive didactics or, rather, towards a "specialized inclusive didactics".

Which curriculum, between equity (adapting and then designing flexible educational curricula to deal with the "right and enhancement" of individual differences) and quality? The problem of enabling graduate teachers (not so much in terms of educational quality as quality with respect to guaranteeing competent professionals, profiles...).

2.2 The conceptual framework: Identifying an innovative and inclusive teaching model in Higher Education

Starting from the emerging vision of inclusion and the need to clarify and share its meaning within a valid and coherent epistemological background, we proceeded to define an idea of inclusion to form the basis of the "Innovative and Inclusive Academia" Project, which would be useful to describe and enhance the virtuous relationship between innovation and inclusion and to support an integrated development model of IN-IN (Innovative and Inclusive) universities.

Basically, it is an idea consistent with the prevailing orientations of the literature, but "enriched" with principles and elements that are original and functional for the subsequent phase of elaboration of a valid and sustainable model of inclusive didactics in higher education.

2.3 Principles and elements

The principles and elements characterizing our idea of inclusion are:

- *The "integrated" epistemology of reference*: ethical (based on values and rights) and ecological-relational model (consistent with the descriptive model of the ICF and the Capability Approach). We have already mentioned in the previous paragraphs the importance of rethinking the profound meaning of Higher Education by enhancing the centrality of the human rights paradigm [65], in the light of the model of human development and well-being, aimed at co-development, at the flourishing of people, communities and contexts. The association of inclusion in the school context with an ecological model - multi-level, multi-dimensional and diachronic - is not a new idea [37]; several authors have already outlined and explored this framework also in the inclusive

perspective [45-40-2 42]. Interpretive models of an in-inclusive school and, in a broader sense, of an inclusive system (thus also of universities) consider in some cases the breadth of ecosystems (micro-meso-macro) and in others the relationships linking structures and processes with outcomes (input-process-outcomes) and others the temporal variations (initial some models combine one or more dimensions, however, only by including all three dimensions (vertical, horizontal and diachronic) is it possible to understand and study an inclusive system extensively and accurately [37].

- *The valorization of the interconnected binomion 'IN-IN': innovation-inclusion*. There is no inclusion without innovation and vice versa, and both feed virtuously. As highlighted in the literature, a deliberate and pedagogically-oriented innovation process of universities - and of university didactics in particular - is coherent and functional to the development of inclusive processes. As Galliani [31] points out, methodological innovation can only be consolidated if it is supported by collegial planning practices, aimed at defining a modular organization of courses and connections between different disciplines in the courses of study, not as an extrinsic obligation to compact teaching and reducing examinations, but to foster critical integrated approaches to knowledge, exploiting multidisciplinary and interdisciplinary in the holistic sign of the unity of knowledge and the training of competent people, "endowed with the aptitude for contextualization and globalization. Didactic innovation based on evidence-based, cooperative and problem-solving strategies, understood as proposing non-routine topics that require autonomous structuring of knowledge and cognitive decentralization. In this way, the learning of all students and their active participation in view of the common good are fostered.

- *The identification of inclusive teaching as an indicator of the inclusiveness of a system*. Inclusive teaching not as a set of specific contents, but a methodological orientation, an operational style to be adopted in daily practice and in the management of all disciplinary curricula, suitably adapted with an approach that facilitates the participation and success of every learner, in line with the principles of the Universal Design for Learning [22]. The Italian "National Conference of University Delegates for Disability" (CNUDD) expands the theme of teaching to the construct of the educational environment, which also regards aspects such as school furnishings and all materials and processes - including digital technologies and teacher training - highlighting the relationships between these aspects. In this way, the training of the teachers is an integrative part of the inclusive educational environment. Consistent with the biopsychosocial and ecological paradigm [29, 17], pedagogical research converges in identifying two interconnected directions of inclusive development: individual and collective, for the acquisition and enhancement of capabilities at the personal level [61- 50-49, 20], through the re-organization of living environments as "competent contexts" in terms of welcoming differences, quality of life, capacitation and participation [10].

- *The identification of the essential elements characterizing inclusive education*. It is essential to construct a framework that integrates the valid, universal and transferable

'essential elements' that characterize inclusive education. The primary reference is Evidence Based Education and in particular Inclusive Evidence Based Education [34-46,45]. These elements will be taken up in the following section on the construction of the operational framework.

2.4 The operational framework: the integrated model of inclusion and inclusive teaching

In order to operationally articulate the idea of inclusion outlined above and to support the development process of Inclusive Universities [1-71, 12], an operational framework was developed (ed. by P. Damiani), visually represented by two diagrams: the inverted cone and the spiral (Figure 1 and Figure 2). They were developed in order to define the original model of inclusion based on inclusive and special teaching which allows for integration and focalization of different elements, dimensions and levels into a single model, consistent of an idea of special and inclusive pedagogy and education [10] and with the ethical and ecological-relational model. The Operational Framework takes into consideration both conceptions of inclusion (narrow and broad) and the related multiple application tracks (policies and practices) highlighted in the literature, providing an integrated descriptive and interpretative model that is consistent with the inclusive model in the university context, outlined above. In light of this framework, the implementation of didactics as an indicator of inclusiveness represents the top of the inverted cone (Fig.1 – Inverted Scheme Cone).

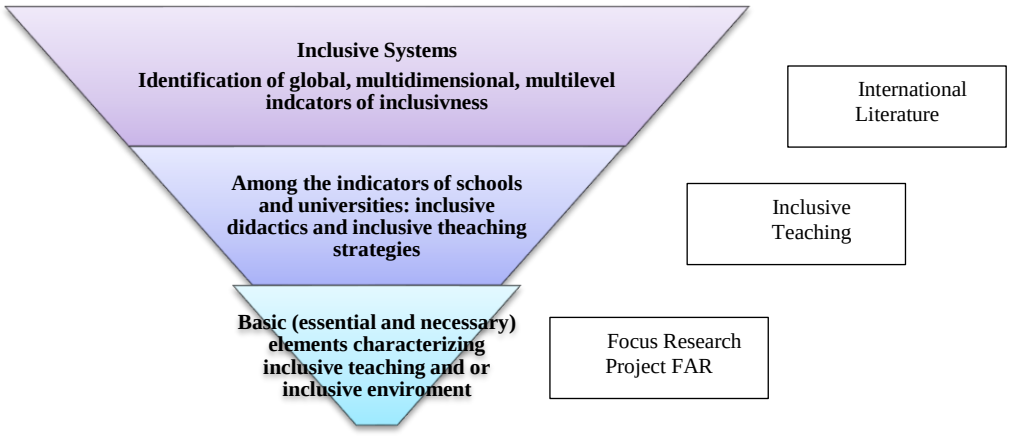

Figure 1: Multidimensional and Multilevel Inverted Cone. The elements of Inclusive Systems

The spiral figure (Figure 2) contributes to recomposing the dichotomous vision between inclusive didactics for special students and inclusive didactics for all, describing the relationships (virtuous spiral interconnection) between the special or specialized level (attentive to the specificities/uniqueness of individuals) and the inclusive or universal level (suitable for all), identifying the essential evidence-based elements of inclusive didactics thus understood ("enriched"), at all levels (macro, meso, micro), for all students.

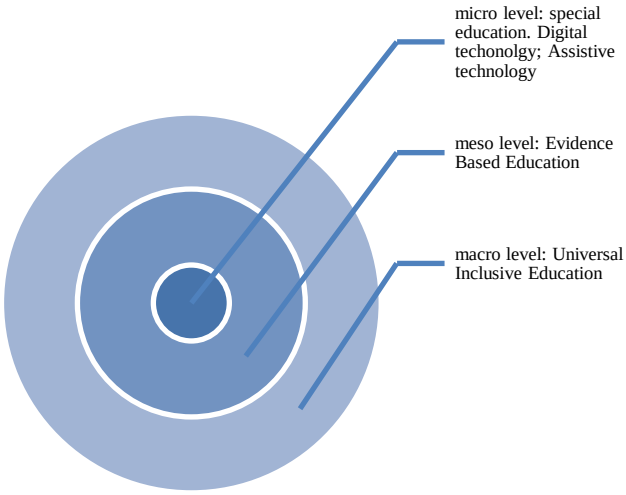

Figure 2: Spiral Figure. The multilevel elements of Inclusive (Full) Education: the relationship between inclusive education and special education.

As can be seen, at the macro level, that of 'broad' inclusive teaching for all learners, is the Universal Design for the learning approach [53, 51] whose principles can be applied in all contexts and foster the co-development of people and learning environments. At the meso-level, that of the less broad meaning of inclusion, evidence-based principles and approaches are identified, with particular reference to the work of Mitchell [45, 46] to foster learning and participation of all students with differences and/or situations of vulnerability who need targeted and specialized policies and practices because, for various reasons, they are most at risk of exclusion (these are principles and approaches that are also useful for all other students, but absolutely essential for them).

The core of the spiral is represented by the micro level dedicated to students with disabilities or other conditions that may require specific and particular, sometimes even unique, practices, strategies and tools, such as assistive technologies (it responds to restrict visions of inclusion and aligns with special pedagogy and didactics). At this

level, the university reception services and other services and resources aimed at understanding the specific needs and providing customized and individualized answers are indispensable, as in the case of finding assistive technologies, human readers, adapted workstations, and so forth. It should be noted how the commitment and intervention of culture, policies and practices at each level also contributes to nourishing the other levels, supporting the virtuous dynamics of co-development.

The overall framework outlined is therefore identifiable as an "ecological-integrated" inclusive model.

2.5 Using digital technologies in the light of the inclusive ecological perspective (integrated model)

The above-mentioned "integrated model" constitutes an epistemological framework that contributes to the critical re-thinking of tools and different technologies in a strong and up-to-date inclusive pedagogical perspective. From this perspective, technology is one of the tools that allows mankind to intervene in the environment to facilitate and overcome barriers, in order to enhance people's functioning and active participation.

As Baldassarre and Sasanelli [5] point out, the majority of countries encourage the use of Information and Communication Technology (ICT) as a tool to promote equity through centrally issued recommendations or suggestions. The European Commission (2008) emphasizes the role of ICT in helping students with special educational needs to have greater autonomy, however, Evidence-based literature highlighted how the mere introduction of technology in the school context does not necessarily lead to a qualitative increase in processes if it is not linked to widespread training of teachers [69]. The research at the European level on methodological and functional aspects is lacking [8], despite the growing and continuous development of increasingly sophisticated technological products; "there is also a lack of reflection on the needs of these students and their teachers in terms of the use of these technologies for learning purposes and in order to integrate these students in both the micro and macro school context".[3]

In fact, it is important to recall that, in the context of disability studies [3-33, 58], where interaction with the context is not very functional, technologies can turn into a factor of social exclusion, becoming a real barrier for people with disabilities [5]. The literature defines technologies for inclusion as various tools and devices, from compensatory to assistive ones, dedicated to a specific student population (depending on whether there is a disability, a disorder or a difficulty), to those "useful/friendly" for all (more properly defined as inclusive technologies). In fact, inclusive technologies are indispensable to make education accessible and usable for students with special educational needs, but they represent a valuable resource for all as they support and enhance everyday actions of intervention useful to respond to the multiplicity and heterogeneity of cognitive and learning styles present within the classroom [22].

In this sense, as noted by Rivoltella and Rossi [52], the problem is not to understand whether technologies are more or less useful independently of the context, but rather to

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understand the value and potential that is gained from them and with them. “It is therefore more reasonable to speak of the efficacy of the uses of technologies, rather than the efficacy of technologies in themselves, and "one of the main issues that arises at the various levels of school governance remains that of the professional training of teachers in the didactically (and not merely instrumental) effective use of technologies, which is able to take into account and translate into daily practice those basic indications to which the best educational research has so far come [68, 5].

In the UDL perspective, flexibility is the factor that allows teachers and educators to adapt to the natural variability of their students and their learning preferences, and the primary means of achieving this is through digital technology. Within this framework, inclusive education stresses/values the close connection between UDL and technology, as the latter can enhance teaching and learning by acting, within the pedagogical paradigm, as an 'equalizer' and promoter of independence and autonomy [27]. Specifically, the key point of UDL lies in its emphasis on variables that can be manipulated to produce high performance; in more detail, Tomlinson's (1999) conceptual work on the design of equalizers that could be used to manipulate key educational variables to make the curriculum accessible and engaging is recalled [27].

The idea of applying a computer interface to a body of digital knowledge and allowing the learner to manipulate the information in such a way as to make it accessible (i.e. on a physical, sensory and cognitive level), at an appropriate level of challenge, has to do with the process of competence development. In this sense, the measurement of UDL outcomes must focus on the benefits of access and sustained engagement: competence and expert performance. That is, prolonged engagement in learning tasks, of increasing difficulty and complexity, leads to high levels of learning and performance (p. 40).

The various declinations of inclusive technologies, at different individual and collective levels, coexist ecologically: "although UDL proactively addresses the needs of diverse learners, it must be emphasized that there will always be learners who require individualization by technology" [5][4]. Furthermore, through the principles of UDL, the importance of choosing, designing and using devices and tools according to the Evidence-Based perspective is upheld, rejecting the fascinating but dangerous idea of technological innovation as a panacea and solution to respond to the complexity and heterogeneity inherent in every classroom [5].

Focusing on higher education, the assumption of our "integrated ecological model", through highlighting the relationships between different levels of inclusion (individual - assistive/compensative; collective - inclusive) and supports (micro-macro; personal-contextual) promotes a design and use of technologies that takes into account the relationships between the different elements and subjects, mitigating the exclusionary and stigmatizing drifts of special tools for special learners (as still often happens when providing compensatory and/or assistive technologies that are not contextualized) and of proposals divorced from the general curricular design.

Thus, the coexistence already described by Hitchock [38] for the school environment is realized. "In today's school environments, assistive technology, universal design and

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UDL must co-exist, as no single solution provides all the accessibility and supports needed for learning. The use of technology offers clear benefits to those who wish to provide flexible, supportive and adjustable learning and productivity experiences for all students" [38][5].

From an application perspective, in recent years, numerous UDL experiments using digital devices and tools have been aimed at improving reading conditions and, in particular, the accessibility of textbooks by exploiting the web and/or specific devices. Alternative ways of accessing information have been proposed, such as video supports for reading, listening with screen readers, links that organize content according to levels of depth and conceptual diagrams/maps, annotations in text format and audio for the production of teaching materials. "As cognitive neuroscience has shown, digital media play a strategic role among these environments and tools. They can form the basis of models of recognition (recognition learning), strategic learning (strategic learning) and affective learning (affective learning) and can respond to the differences of each subject" [15][6].

In the light of this, the choice was to start from the actions underway at the University of Modena and Reggio Emilia (Unimore), based on the Evidence Based Education and Universal Design for learning approaches, in order to support the virtuous relationship between inclusive education and special education, in particular through the dissemination of digital technologies to encourage everyone's participation, building real learning communities [18]. In line with the dual-level perspective, research-training workshops addressed to all teachers on Team Based Learning and UDL approaches have been planned and implemented, with the future perspective of evaluating the applications and results of Universal Design at inter-university level [6-42,43].

Digital technologies were also introduced to facilitate reading and comprehension of written texts. More in detail, as of January 2023, as part of the Unimore Service for students with disabilities and with DSA, a "Accessible Books" pilot project was launched, aimed at students with DSA and sensory and/or intellectual disabilities, with the intention of providing textbooks and/or scientific articles in digitized and - where necessary - facilitated format, through the direct involvement of students.

3 Conclusion

The framework outlined allows the nurture of a virtuous circularity between the actions in the field at different levels and with different actors, while activating reflective and evaluative processes on the actual impact of the actions taken by teachers in terms of "inclusiveness".

The literature review reveals that Inclusive Higher Education should embrace inclusive teaching, together with other dimensions as design and implementation of adequate learning environments, physical environment, qualitative interactions among teachers and students, curriculum design, classroom climate, collaborative and active teaching and learning methods and assessment.

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[6] p. 93

Educators have a strategic role in overcoming the actual problems, and in creating a new ecosystem in our universities.

Faculty or Educational Development has a role to play: teachers could develop awareness about these topics, could learn how to create inclusive learning environments, could learn how to design inclusive and interdisciplinary curricula, could adopt more largely formative assessment and cooperative teaching approaches. Teachers should receive guidance and support to develop inclusive teaching practices through learning communities, diversity and inclusion seminars, and workshops on inclusive pedagogy, curriculum design and assessment. Faculty should build activities or modules demonstrating how equity and inclusion can be incorporated in course curriculum and pedagogy [41].

References

1. Alkire, S.: Dimensions of Human Development, World Development, 30(2), 181–205. Elsevier Science Ltd (2002).
2. Anderson, J., Boyle, C., Deppeler, J.: The Ecology of Inclusive Education. In: Zhang, H., Chan, P.W.K., Boyle, C. (eds) Equality in Education. Sense Publishers, Rotterdam. (2014). https://doi.org/10.1007/978-94-6209-692-9_3.
3. Anderberg, P., Jönsson, B.: Being there. Disability & Society, (20), 719-73 (2005).
4. Aquario, D., Pais, I., Ghedin, E.: Accessibilità alla conoscenza e Universal Design. Uno studio esplorativo con docenti e studenti Universitari. Italian Journal of Special Education for Inclusion, 2, 93-105 (2017).
5. Baldassarre, M., Sasanelli, L.: UDL and Inclusive Technologies: state of the art and models for implementation, QTimes – webmagazine Anno XIII - 3, 153-171 (2021).
6. Baumann, T., Melle, I.: Multimedia learning environments for heterogeneous learning groups in chemistry education – conception and evaluation. In O. E. Finlayson, E. McLoughlin, S. Erduran & P. Childs (Eds.), Proceedings of the ESERA 2017 Conference. Research, practice and collaboration in science education, Dublin: Dublin City University. 583-592 (2018).
7. Bertagna, G.: Per una scuola dell'inclusione. La pedagogia generale come pedagogia speciale. Edizioni Studium, Roma (2023).
8. Besio, S.: Tecnologie assistive per la disabilità. Pensa MultiMedia, Lecce (2005).
9. Biggeri, M., Santi, M.: The missing dimensions of children's well-being and well-becoming in education systems: capabilities and philosophy for children. Journal of human development and capabilities, 13(3), 373-395 (2012).
10. Biggeri, M., Bellanca, N.: In (eds.). Dalla relazione di cura alla relazione di prossimità. L'approccio delle Capability alle persone con disabilità. Liguori, Napoli (2010).
11. Bocci, F.: Pedagogia speciale come pedagogia inclusiva. Guerini Editore, Milano (2021).
12. Boni, A., Gasper, D.: Rethinking the quality of universities: How can human development thinking contribute? Journal of Human Development and Capabilities, 13(3), 451-470 (2012).
13. Boni, A., Walker, M.: Universities and Global Human Development: Theoretical and Empirical Insights for Social Change. Routledge, London and New York (2016).
14. Booth, T., Ainscow, M.: Index for Inclusion: Developing Learning and Participation in Schools. Centre for Studies on Inclusive Education, United Kingdom (2002).

15. Brantlinger, E.: Ideologies discerned, values determined: Getting past the hierarchies of special education. In L. Ware (a cura di), Ideology and the politics of in/exclusion. Peter Lang, New York, 11-31 (2004).
16. Brischetto, A.: L'inclusione sociale nel settore delle Learning Technologies: l'approccio Universal Design (unifi.it) (2015).
17. Bronfenbrenner, U.: The Ecology of Human Development: Natural Experiments and Planned. Artes Médicas, Porto Alegre (1996).
18. Burchardt, T.: Monitoring inequality: Putting the capability approach to work, in book Social justice and public policy Seeking fairness in diverse societies, (2008).
19. Calvani, A.: Rete, comunità e conoscenza. Costruire e gestire dinamiche collaborative. Erickson, Trento (2005).
20. Canevaro, A., Malaguti E.: Inclusione ed educazione: sfide contemporanee nel dibattito intorno alla pedagogia speciale. Italian Journal of Special Education for Inclusion, II (2), 97- 108 (2014).
21. CNUDD (Conferenza Nazionale Universitaria dei Delegati per la Disabilità): Linee Guida, Erikson, Trento, 13,pp. 364-375 (2014).
22. Coggi, C.: Innovare la didattica e la valutazione in Università: Il progetto IRIDI per la formazione dei docenti. FrancoAngeli, Milano (2019).
23. Cottini, L.: Universal Design for Learning e Curricolo Inclusivo. Imparare a progettare un didattica funzionale ai bisogni della classe e dei singoli. Strategie e strumenti. Unità didattiche per tutte le discipline. Giunti Edu., (2019).
24. Cottini, L.: Didattica speciale e inclusione scolastica. Carocci, Roma (2017).
25. D'Alessio, S.: La ricerca per l'educazione inclusiva a livello globale. L'integrazione scolastica e sociale.14, n. 3, 243-250 (2015).
26. D'Alessio, S., Balerna, C., Mainardi M.: Il modello inclusivo: tra passato e futuro, «Scuola Ticinese», 11-18, (2014), http://www.supsi.ch/go/ dfa-inclusione.
27. Dovigo, F., Pedone, F.: (a cura di), I Bisogni Educativi Speciali. Una guida critica per insegnanti (pp. 39-66). Carocci, Roma (2018).
28. Edyburn, D. L.: Would you recognize Universal Design for Learning if you saw it? Ten propositions for new directions for the second decade of UDL. Learning Disability Quarterly, 33, 33-41 (2010).
29. Engel, G.: The Clinical Application of the Biopsychosocial Model. American Journal of Psychiatry, 137, 535-544 (1980).
30. Englund, T.: Education as a citizenship right. Different traditions and possibilities of interpretations. Utbildning & Demokrati: Tidskrift för didaktik och utbildningspolitik, 11(1), 111–120 (2002).
31. Galliani, L.: Le nuove forme della didattica in una Università cambiata. La convergenza dei percorsi formativi da Bologna 1999 a Londra 2007. Camerino, 1 febbraio 2007
32. Gibbs, P.: Should contentment be a key aim in higher education? Educational Philosophy and Theory 49(3).1-11 (2016).
33. Goggin, G.: Disability and digital inequalities: rethinking digital divides with disability theory. In Ragnedda, M., & Muschert, G. (ed.), Theorizing Digital Divides (63-74). London, New Yorh: Routledge (2018).
34. Hattie, J.: Visible learning: A synthesis of over 800 meta-ana lyses related to achievement. Routledge, Routdledge (2009).
35. Hooks, B.: Teaching community: a pedagogy of hope, New York, Routledge, New York (2003).
36. Hooks, B.: Writing beyond race: living theory and practice, Routledge, New York (2012).

37. Ianes, D.: La speciale normalità. Strategie di integrazione e inclusione per le disabilità e i bisogni educativi speciali. Nuova edizione. Erickson, Trento (2022).
38. Ianes, D., Dell'Anna, S.: Un modello ecologico per la valutazione di un Sistema scolastico inclusivo. In Caldin, R. (a cura di) Pedagogia Speciale e didattica speciale 2. Le origini, lo stato dell'arte, gli scenari futuri, Erickson, Trento (2022).
39. Hitchcock, C.: Assistive Technology, Universal Design, Universal Design for Learning: Improved Learning Opportunities. Journal Special Education Technology, 18, 4, 45-52 (2003).
40. Kinsella, W. (2018). Organising inclusive schools. International Journal of Inclusive Education. https://doi.org/10.1080/13603116.2018.1516820.
41. Kumar, R., Refaei, B.: Equity and Inclusion in Higher Education. Strategies for Teaching, Paperback (2021).
42. Loreman, T., Forlin, C. & Sharma, U.: Measuring indicators of inclusive education: A systematic review of the literature. In C. Forlin & T. Loreman (Eds.), Measuring Inclusive Education. Emerald, Bingley, UK 3-17 (2014).
43. Mangiatordi, A.: Using universal design for learning guidelines to evaluate a computer assisted note taking software solution, In Methodologies and Intelligent Systems for Technology Enhanced Learning, 157-164. Springer, Berlin Heidelberg (2018).
44. Mangiatordi, A., contributo presso il Convegno nazionale Società Italiana di Pedagogia Speciale (SIPeS) "Culture dell'accessibilità per un mondo inclusivo Traiettorie per gli ambienti di vita, la didattica, la tecnologia", 9 - 10 giugno 2023, Università di Bergamo.
45. Mengoni, M., Ceccacci, S., Del Bianco, N., D'Angelo, I., Capellini S.A., Giaconi C.: Evaluation strategies at University for students with Dyslexia: a pilot study supported by face emotion recognition, International Conference on Computational Science and Computational Intelligence (CSCI), 855-860. Las Vegas, NV, USA, (2021).
46. Mitchell, D.: Diversities in Education. Effective ways to reach all learners. Routledge, London (2017).
47. Mitchell, D.: What really works in special and inclusive education: Using evidence-based teaching strategies (2nd ed.). Routledge, London (2014).
48. Nussbaum, M.: Creating Capabilities: The Human Development Approach, Harvard University Press, Harvard (2011).
49. Nussbaum, M.: Cultivating humanity. A classical defense of reform in liberal education. Cambridge, MA: Harvard University (1997).
50. Nussbaum, M.: Human capabilities, female human beings. In M. Nussbaum and J. Glover Women, Culture and Development. Clarendon Press, Oxford (1995).
51. Orr, D., Gwosc, C., Netz, N.: Social and Economic Conditions of Student Life in Europe: Synopsis of Indicators. Final Report. Eurostudent IV 2008–2011. Bielefeld, W. Bertelsmann Verlag (2011).
52. Pace, D., Schwart, D.: Accessibility in post secondary education: Application of UDL to college curriculum (2008).
53. Rivoltella, P.C., Rossi, P.G.: Il corpo e la macchina. Tecnologia, cultura, educazione. Brescia: Morcelliana (2019).
54. Rose, D. H. & Meyer, A.: Teaching every student in the digital age: Universal Design for Learning. Alexanderia, VA: Association for Supervision and Curriculum Development (2002).
55. Ruggerini, C., Orsolini, M.: Understanding Intellectual Disability: A Guide for Professionals and Parents. Understanding Atypical Development. Routledge, New York (2023).
56. Santi, M.: Epistemologia dell'inclusione? Un paradosso "speciale" per una sfida possibile. In L. d'Alonzo (ed.), Ontologia Special Education. Pensa MultiMedia, Lecce (2014).

57. Santi, M., Di Masi, D.: Indeep university. Un progetto di ricerca partecipata per una università inclusiva. University Press, Padova (2017).
58. Seymour, W.: Holding the line online: exploring wired relationships for people with disabilities, Disability & Society, (19): 291-305 (2004).
59. Semeraro, R.: Valutazione e qualità della didattica universitaria. Le prospettive nazionali e internazionali. Franco Angeli, Milano (2006).
60. Sen, A.K.: Capability and wellbeing. In M. Nussbaum and A. Sen (eds) The Quality of Life. Oxford University, Oxford 270-293 (1993).
61. Sen, A. K.: Commodities and Capabilities. North Holland, Amsterdam (1985a).
62. Skrtic, T.: Disability and democracy: Reconstructing (special) education for post-modernity. Teachers College Press, New York (1995).
63. Terzi, L.: Beyond the Dilemma of Difference: The Capability Approach to Disability and Special Educational needs. Journal of Philosophy of Education, 39, 443-459 (2005).
64. Tomlinson, C. A.: The differentiated classroom: Responding to the needs of all learners. Alexandria, VA: ASCD (1999).
65. United Nations Organization: UN Convention on the rights of people with disabilities and optional protocol.(2006) from http://www.un.org/disabilities/documents/convention/convoptprot-e.pdf)
66. Unterhalter, E., V. Carpentier (Eds): Global Inequalities and Higher education. Whose Interests are we Serving? Houndmills, Palgrave MacMillan (2010).
67. Vertovec, S.: Super-diversity and its implications. Ethnic and Racial Studies. 30 (6), (2007).
68. Vivanet, G.: Tecnologie per l'inclusione: ovvietà, evidenze, orizzonti da esplorare. In Calvani, A. (a cura di). Tecnologie per l'inclusione, Torino: Carocci Faber (2020).
69. Vivanet, G.: Sull'efficacia delle tecnologie nella scuola: analisi critica delle evidenze empiriche. TD Tecnologie Didattiche, 22 (2), 95-100 (2014b).
70. Ware, L.: Ideology and the politics of in/ exclusion. Peter Lang, New York (2004).
71. Webb, N., Franke, M.L., Ing, M., Chan, A., De, T., Freund, D., Battey, D.: The role of teacher instructional practices in student collaboration, Contemporary Educational Psychology, 33, 3, 360-381 (2008).
72. Walker, M.:Higher Education Pedagogies. A Capabilities Approach, Maidenhead, Open University Press (2006).
73. World Health Organization (WHO): International Classification of Functioning, Disability and Health. WHO Publishing, Geneva (2001).
74. Young, I. M.: Inclusion and Democracy, Oxford University Press, Oxford, 31-33 (2000).