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EDUCATIONAL TECHNOLOGIES AND INCLUSIVE CURRICULUM FOR STUDENT VALORIZATION.

TECNOLOGIE DIDATTICHE E CURRICOLO INCLUSIVO PER LA VALORIZZAZIONE DELLO STUDENTE.

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Abstract

The present paper is a critical essay which starts from an international perspective, develops through the analysis of the changes in the Italian school curriculum and ends with a description of the Italian educational perspective. From the inclusive educational routes to the UDL's potentials and scopes, the paper stresses our need to create special-need-based inclusive educational itineraries and to place special needs at the centre of the teaching/learning process. Thus, an educational-success-oriented curriculum lends itself to becoming a fertile terrain where each and every student could safely and trusfully express his/her own specific aptitudes and inclinations. New technologies make their own valuable contribution to this new educational scenario not only because they facilitate the learning process, but also because they promote the development of digital skills, both for students and for teachers. The data supporting the present study, however, show that the Italian school curriculum is not yet efficient in the use and transmission of digital skills. A reconsideration of teacher training routes and a restructuring of school curricula is fundamental, and the recent Scuola Futura initiatives for PNRR (the Italian Recovery and Resilience Plan) to fund the renovation of the Italian school system could at least be considered a valuable start. The present study finally stresses the important contribution of digital education in making the student an active part in his/her own learning route by fostering such cognitive and metacognitive processes and creative, divergent, immersive and emotionally challenging learning itineraries as could valorize his/her educational potentials.

Il presente articolo propone un saggio critico che si sviluppa attraverso l'analisi dei processi di cambiamento del curricolo scolastico partendo da una prospettiva internazionale sino a giungere alla descrizione della prospettiva italiana. Dagli itinerari didattici inclusivi alle potenzialità fornite dai principi fondanti dell'Universal design for learning la trattazione evidenzia la necessità di creare percorsi didattici inclusivi a partire dai bisogni educativi speciali e di collocare quest'ultimi al centro del processo di insegnamento/apprendimento; ecco dunque che il curricolo, attraverso cui realizzare il successo formativo, si curva per diventare terreno fertile sul quale ciascun studente possa esprimere con fiducia e serenità le proprie propensioni, attitudini e specificità. All'interno di questa costruzione si inseriscono le nuove

tecnologie rilevate non solo come strumento facilitatore, ma come promotrici dello sviluppo delle competenze digitali, come per gli studenti così per i docenti. I dati a supporto del presente studio dimostrano però che il curricolo della scuola italiana è ancora deficitario nell'utilizzo e nella trasmissione delle competenze digitali, diventa dunque fondamentale ripensare la formazione docente e la struttura del curricolo a partire dalle recenti spinte al rinnovamento previste da Scuola Futura attraverso i fondi del PNRR. Lo studio si sofferma infine sulle possibilità offerte dalla didattica digitale attraverso cui l'alunno diventa soggetto attivo del proprio percorso di apprendimento promuovendo, difatti, processi cognitivi e metacognitivi, traiettorie d'apprendimento creative e divergenti, immersive ed emotivamente coinvolgenti tali da valorizzarne le potenzialità.

Keywords

Education; curriculum; technologies; inclusion; Universal Design for Learning.
Didattica; curricolo; tecnologie; inclusione; UDL.

1. The curriculum in the Italian school context

The word *curriculum* originally belongs to Anglo-Saxon pedagogy and indicates a set of educational activities that the school provides in order to achieve definite educational objectives. This concept refers to a kind of school necessarily based on considerable operational autonomy.

Within an Anglo-Saxon-pedagogy-driven school context, Stenhouse made an important contribution in 1975, when he examined the nature of the curriculum and identified the features and criteria for the contents and strategies appropriate to it: a) *enable students to make choices and take on responsibilities for the consequences*; b) *support students in their search for ideas and in their intellectual problematization*; c) *be completed*; d) *acknowledge the student's possible failure*; e) *foster the acquisition of rules and norms*.

Thus, the curriculum is centred on the specific school and is connected to the causes and terms of student access to education; it also reflects contents, methods and implementation strategies. Implementation conditions the teacher's position in the teachin and learning process, inasmuch as he/she plays a crucial role in the elaboration and management of the curriculum.

Moving on to the Italian school scenario, a scientific recognition of the curriculum has been made by C. Scurati, who established the following characterizing principles:

- *intentionality*: a curricolum is designed intentionally and includes:
- *reflexivity*: a curriculum is created by a conscient, critical and non-casual behavior in every step its designers take;
- *organization*: a curriculum is a complex articulated system;

- *sociality*: the creation of a curriculum implies the designers' collective decision-making and the integration of their specific cultural and professional abilities;
- *publicity*: a curricolum is a fully-communicable project that is elaborated in the designers' full awareness and certainty that any possible request for justification can be answered exhaustively;
- *selectivity*: a curriculum presupposes a selection of the training objectives that the school community can pursue;
- *decisionality*: drifting from an executive logic to a more managerial logic whereby individual and collective responsibility is crucial to the cultural and educational process that has been designed.

The curriculum Scurati has proposed is the result of an intentional design that has been oriented toward precise objectives and includes a wide range of resources and educational situations.

Baldacci (2006) advocates a reconsideration of the curriculum on the basis of a pedagogic perspective centred on the long-term overall curriculum results rather than on the short-term per-subject results. In his view, it is not the formative value of the single subject that matters: it is the complex multi-faceted knowledge system that has the greatest impact on the student's growth and development, which must be assessed on a long-term basis (Baldacci, 2013).

L. Perla (2014) reminds us that the curriculum is a set of educational experiences made at school, contents and subject matter, tools and instruments, meeting occasions, learing events, resources, environments and contexts teachers design, plan and organize for the students to achieve teaching/learning objectives. In her view, it is the curriculum that drives teachers to consider the components of the educational process by starting right from the relationship between teaching units and teaching mediators (Perla & Vinci, 2016).

2. Inclusive School, Curriculum and Universal Design for Learning

Inclusivity in Italian schools first appeared in 2000, when the Memorandum on Permanent Education and Training following the European Council in Lisbon stressed a twofold important permanent learning objective: promoting active cityzenship and employability. Moreover, UNESCO published various international documents and declarations stressing that the expression Special Educational Learning should be replaced by *Education for all*.

The first Italian legal document concerning the inclusion of all special educational needs students is Law No. 170 of 2010, *Nuove Norme in materia di disturbi specifici di apprendimento in ambito scolastico* (New Rules in Specific Learning Disorders at School), which estabilishes the right of pupils and students with specific learning disorders to

enjoy compensatory instruments and measures and educatioal flexibility in all degrees and stages of education and training.

The second document, *Strumenti di intervento per alunni con bisogni educativi speciali e organizzazione territoriale per l'inclusione scolastica* (Intervention tools for special educational needs students and local district planning for inclusivity at school), was issued in December 2012. Circular documents and notes on special needs students by the Ministry of Public Education letters have followed through the years.

In inclusive Italian schools, where diversity is accepted, the development of a new perspective can be appreciated, which implies major changes in the learning environments in a context of equal opportunity and full participation.

In the Italian school system, a curriculum becomes inclusive right when student differences are taken into account, which is thus coherent with forms of teaching and learning that aim at placing educational contents on an equal footing with the learning process.

Universal Design for Learning is one founding element of an inclusive curriculum. As Sgambelluri put it in 2020, it is a way of designing teaching materials, methods and strategies aiming at programming a priori an instrument all can use through a flexible approach that can be adapted to and tailored on each and every student or pupil.

The UDL educational approach centres its educational designing strategies on the multiplicity of teaching materials and learning modes, a multiplicity based not only on a quantitative differentiation of task difficulties, but also on a qualitative integration of human-mind activities that are useful for everybody (Savia, 2016).

UDL does foster more adequate routes to inclusivity-based learning, but with a flipped perspective which entails designing, from the very beginning, forms of intervention tailored to each and every student, regardless of any similarities and/or differences.

Sgambelluri (2020) saw a change of paradigm in our way of looking at educational designing, namely starting from a concept of human personal dignity that makes for the avoidance of any form of discrimination against the individual in teaching/learning situations and contexts.

A very well-known example of UDL application is the Rubik cube, which was designed also for the sight-impaired, but at the same time it has widened the task's range of options for the non-sight-impaired or the people with perception accessibility disorders as well (Ianes, 2016) – this is to indicate that a UDL perspective implies that what is indispensable for one is also useful for everybody.

3. Digital Skill Learning in the Curriculum

The use of Information and Communication Technology within society today is well-known to everybody. Our world is greatly influenced by all that grows and develops in an unstoppable technological progress.

As regards the development of key skills (European Council, 2018), Europe reminds us of the crucial role of ICT in the world today. Through the mastering of ICT skills, young people today will be able to take an active part in society tomorrow, in a world that will be more and more mobile and digital – new learning modes need exploring.

DigiComp 2.1 (Vuorikari et al., 2022) by the European Union is the most suitable instrument for monitoring the levels of command of new technologies, It envisages the following 5 areas related to various aspects of digital skills.

I. *Information/Data Literacy*

It is the basic skill for browsing the web, searching for and filtering information. It also reveals the ability to value and comprehend data and information that might enable the litearte to move on using metacognitive competences. It finally includes processing data in an organized and structured scenario.

II. *Communication and Collaboration*

This area is divided into six different competences: 1) interacting with the others, 2) sharing information, 3) practicing digital citizenship, 4) collaborating through technologies, 5) mastering netiquette and, finally, 6) being able to use digital identity.

III. *Creation of Digital Material*

This is the area where we find the competence useful for the creation and development of digital material, the ability to re-elaborate it and to plan and develop a sequence of instructions connected to programming and designing.

IV. *Security*

It is the ability to protect devices, data and privacy, along with the ability to protect the health and well-being of the people and the environment.

V. *Problem Solving*

The last area concerns the ability to retrieve possible solutions, identify technological needs and responses; this area is also related to the ability to use new technologies in a creative manner and to identify possible digital competence gaps and the consequent ability to adopt training-oriented strategies.

The recent OCSE-PISA studies (2018) related to the Italian students' basic digital competenes (Framework 1) shows us very poor results: only 5.4% of the Italian students score 5/6 in critical text comprehension and revision, only 1 student out of

20 can tell a fact from an opinion, information from fake news. On the other hand, it is takes very little to realize that training is just where the problem lies – only 50% of Italian teachers proves to have potentially-transferable digital competences.

Our need to promote the development of new technologies within the teachers' training routes is then a strategic priority for the developement of digital competences in the students' training routes. According to recent scientific research, structured training routes raise teacher digital skills (Lo Iacono, Cardinali, 2022) and the TPACK (Mishra, Koehler, 2006) meeting point between technology, pedagogy and subject-matter content is the most appropriate path to be trodden in order to steer educational strategies toward a new-technology-assisted transmission of subject-matter skills (Bonaiuti, 2012).

Digital innovations enable us to design learning contexts that let the pupil play a leading role in the training process, one that makes him/her an active subject of learning and knowledge; through virtual reality, augmented models, 3D building, simulation of the real world, digital storytelling, digital maps, interactive presentations, coding, robotics, gamification, etc., the teacher will be able to activate an erotic of knowledge (Recalcati, 2014) that manifests itself as an unconsciously active anthropic process, a natural emotionally-fulfilled becoming.

Therefore, the real challenge here is to be able to spread these competences between and among teachers for the creation of a permanently-shared form of e-learning (Guglieman, 2011) to be achieved through an inclusive strategy that is sustainable and universally-accessible (Baroni, Lazzari, 2013). The acquisition and practise of learning and knowledge and a sustainable development of digital skills through an equal accessibility and use of digital resources (Rivoltella, 2020) must be carried out from the curricula initially proposed by schools in order to consolidate within a lifelong-learning scenario that each and every student will design for himself/herself.

4. Universal Design for Learning and Educational Technologies

UDL ascribes technologies an important role as instruments of support that guarantee accessibility for everybody (Rose et al., 2009).

In digital technologies Rose & Meyer (2002) have found the following 4 features that best respond to flexibility needs and are very useful in the classroom:

- *versatility*: the ability to perform various tasks, that is to say all that contributes to the representation of digital content in various formats (text, still image, motion picture, sound, multimedia, etc.) as is, without modification/transformation;
- *ability to transform:* the ability to switch from one format to another;

- *marking:* the ability to mark content, viz. the teacher prepares a passage where important paragraphs or sentences must be selected, thus allowing for the organization of content and of the actifities to be developed according to student needs;
- *connectivity:* the ability to establish and maintain connections. As regards educational material, this function enables our devices to link one topic to another, e.g. by browsing a text and creating links with other elements of a text or, still, by making connections between elements inside and elements outside the text, such as images, videos or web pages.

UDL proposals enable the student to interact with educational material in various ways. UDL teaching strategies in digital technologies foster the elimination of barriers, thus recognizing diversity and practicing a form of education that is accessible to everybody.

Another instance of UDL implementation is CAST, the UDL electronically-published collection where books belonging to the library have a toolbar called Texhelp which allows for easy text reading (on a text-to-speech basis), text marking (color marking can be applied to words, sentences or paragraphs) and educational supports within the text.

5. Conclusions

The ability to renew and change oneself and the world around is the next challenge that the education system has to experience; At first glance, we can surely witness the continuous and reiterated permanence of an archaic methodological and strategic background in teaching and/or learning in Italy today. The feedback we have received does not concern the educational context so much as the pupils' performance in standardized Invalsi tests (INVALSI 2002), whereby about half the students did not reach levels of acquisition of the basic skills. A high change and transformation index can be seen, however, within the numerous and diachronically-constant legislative interventions from Law No. 107 of 2015 (concerning the "Buona Scuola" initiative) up until today. If we analyze innovation in this period, we cannot fail to observe a radical change of pace, due to the Covid-19 pandemic as well, which has aligned the Italian school system to other educational systems in several aspects, not only in the cognitive structure that the students asked for, but also in the educational research and practices already in use in various EU and non-EU countries. This impulse toward innovation and the introduction of new technologies in education, through the use of tools, strategies and routes, a considerable renewal of educational contexts demanded by PNRR with the introduction to the Scuola 4.0 initiative, brilliantly couple with an overall consolidation of the Italian school curriculum. Greater relevance is achieved if, according to the Italian educational authorities indications for

2012, innovation choices are adjusted to a curriculum whereby inclusivity is the ability to intecept the student's emotions and motivation – priority in this specific case would be given to the valorization of the student's potentials and aptitudes.

It is then indispensable to renew educational methods and strategies reconsidered within round semantic fields by means of multidirectional multilinguistic and multi-sensorial communication (Lo Iacono, 2020). Pupils become active protagonists of their own learining process if and only if their teacher manages to transfer skills within a semantic and notional context which is familiar to them, A context becomes familiar to students only thanks to a dynamic in-fieri development of situations, notions and languages that they can easily learn and recognize.

New technologies foster the creation of these contexts and learning environments, as regards not only the physical classroom setting, but mainly the management of the learning process which is, in the end, transferred by the use of already-learned languages and instruments, the use of virtual software, applications and simulations that meet the digital native's needs and doubts.

Moreover, the need to develop digital intelligence and to facilitate the learning of digital skills does not represent only an opportunity, but focuses and manifests itself within the evolution of the individual and the community. New technologies are then a noticeable and notable social component – the world today. Ferri clearly describes this scenario in which new technologies are here to stay and we will have to come to terms with it. He then goes on to say that every jump in the paradigm and any disruption of the paradigm and/or any single specificity implies a certain incommensurability with the previous paradigm (Ferri, 2011)

So, the digital world, new technologies and the web are contextual facilitators and prompting instruments, teaching/learning strategies and cognitive processes, curriculum-based skills and soft skills – they can also act as contexts ready to provide multi-directional routes for the development of each and every students specificities and potentials. Moreover, they intercept that emotional sphere through which the pupil can feel an active subject of his/her own learning, that emotional sphere thanks to which the educational process takes place through a self-determination and self-effectiveness principle whereby the individual perceives himself/herself as capable of taking control of situations, activities or aspects of his/her own psychological, social and cognitive functions (Bandura, 2000).

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